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The Wharton School
MANAGEMENT 230 Bulk Pack
Professors Babin and Weber
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1.

WHARTON REPROGRAPHICS

UNIVERSITY OF PENNSYLVANIA
The Wharton School

Entrepreneurial Decision Making
Management 230

Registration Information

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Entrepreneurship Survey

What is your primary reason for taking Management 230?

Do you consider yourself to be an entrepreneur/entrepreneurial? Why/Why not?

Have you or anyone in your family started a business? (Please describe.)

from Barreto, Umberto (1989) The Entrepreneur in Economic Thought: Disappearance and Explanat.
London: Routledge

Chapter one

The entrepreneur throughout the history of economic thought

Introduction

For the entrepreneur to disappear from economic theory, he must have been visible at some point in time. In fact, the entrepreneur was more than merely present; he played several fundamental roles in a wide variety of settings. The entrepreneur has been risk-bearer, innovator, industrial leader – the list is almost endless. Entrepreneurship has been used as an explanatory factor in theories designed to analyze growth (and technological change), uncertainty, firm decision-making (and ownership), and the properties of the market system.

It is this extensive and constantly crucial use of the entrepreneur that makes the question of his disappearance from a particular school of economics interesting. This chapter will show just how wide-ranging and how fundamental the entrepreneur has been throughout the history of economic thought.

In order to analyze this main point, a categorization of the many facets of entrepreneurship must be devised. Thus a derivative benefit from the effort to show the important roles the entrepreneur has played is the development of a taxonomy of entrepreneurship. Arranging a mix of different characterizations into a logical framework provides a method with which to analyze research into entrepreneurship. The ultimate objective, however, is to convey the fundamental, indispensable nature of the entrepreneur throughout the history of economic thought.

The key to analyzing the intellectual history of entrepreneurship lies in the framework chosen to present the myriad of characterizations. There are three choices available: categorization by individual author, school, or functional role.

The first two are the traditional means of organization in the history of economic thought.[1] The analysis focuses on the determination of a particular individual's or school's understanding of a given problem. The goal is often a comparison of different points of view, a description of the development of the given problem, or recognition of specific achievements.

None of these, however, is the present objective. There will be no chronological development of the theory of the entrepreneur, primarily because there is no generally accepted theory of entrepreneurship. There is no 'right' answer – only many different ways of viewing the problem. Thus our taxonomy must be determined by the entrepreneur's functional role. This approach will highlight the many varied roles the entrepreneur has played throughout the history of economic thought and avoid issues of priority or correctness.

The entrepreneurial classification scheme presented in this chapter contains four main entries: coordination, arbitrage, innovation, and uncertainty-bearing. In addition, the last category contains three subgroupings: speculation, ownership, and decision-making.

The work of every theorist who has subscribed to a particular view of entrepreneurship will not be reviewed. Instead, a representative work will be chosen and examined. Thus the entrepreneur as coordinator focuses on Jean-Baptiste Say's entrepreneur as combiner of resources. Israel Kirzner's work represents the Austrian theory of the entrepreneur as arbitrageur, an equilibrating agent in a world of imperfect information. The entrepreneur as innovator is captured in Joseph Schumpeter's theory of economic development. Finally, the entrepreneur as uncertainty-bearer is analyzed. The tripartite division is composed of the following representatives: Richard Cantillon (entrepreneur as speculator), F. B. Hawley (entrepreneur as owner of the output), and Frank Knight (entrepreneur as ultimate decision-maker under uncertainty).

It is important to note that neither priority nor any special dominance is bestowed upon those singled out for review. The choices were made based on the clarity of exposition and the specific focus on a particular functional role. For theories in which the entrepreneur plays more than one role, the particular function under consideration will be highlighted.

In addition, the various roles will not be compared or judged. The reader will notice that some descriptions of the entrepreneur's part in the market system are directly contradictory. Although it would be interesting and worthwhile to try to fit the pieces together, this task is outside the scope of this work. Once again, the crucial point to be conveyed is an appreciation for the various dominant roles the entrepreneur has played in the history of

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economic thought. From Cantillon to Kirzner, economists have investigated the entrepreneur in their quest to gain insight into the market system.

The entrepreneur as coordinator

Jean-Baptiste Say, a French political economist in the early nineteenth century, is most renowned for his 'law of markets'. Say's theory of production, however, contains the germ of all future investigations into the entrepreneur as a coordinating, supervising agent of production.

His major work, *A Treatise on Political Economy*, presents a fairly detailed analysis of the production and distribution of products in a competitive market system.[2] Say's *Cours Complet d'Economie Politique Practique* (1st edition, 1828), also developed a model of production and distribution with a dominant role assigned to entrepreneurship as coordination. In addition, he published an essentially abridged version of the *Treatise* entitled *A Catechism of Political Economy* (translated by John Richter in 1821).

Remarkably, Say's treatment of the entrepreneur went largely unnoticed. Several writers have bemoaned his fellow classical economists' lack of initiative in integrating entrepreneurial considerations into classical economic theory. According to Hebert and Link,

> [Ricardo] failed entirely to pursue Say's suggestion that the entrepreneur is distinguishable from the other agents of production. Smith could not have done so because his work preceded Say's, but Say had formalized the term entrepreneur and given it definition some 14 years before Ricardo's *Principles* appeared. . . . It is noteworthy that in the correspondence between Say and Ricardo, neither the nature nor role of the entrepreneur is once mentioned, the usual discussion focusing instead on the topic of value.[3]

Schumpeter credits Say with presenting economic theory with a fourth agent that hires or 'combines' the others, but notes that the lack of attention resulted in a missed opportunity:

> This could have led – more than it actually did lead – to a clearer perception of the role of the 'capitalist,' who might have been ousted from his position in the center of capitalist industry and put into a more appropriate place among the owners of factors that are being hired.[4]

Koolman presents some possible arguments for the English classical school's neglect of Say's entrepreneur, including: (a) the lack of an entrepreneurial tradition in England; Say's own rationale that (b) the English language was insufficiently developed and (c) the different nature of English law; and (d) the macroeconomic perspective of the English classical school.[5]

In any case, there can be no doubt that Say presented the first, and still quite powerful, view of the entrepreneur as combiner and coordinator of productive services. For this reason, we choose Say's entrepreneur as representative of a coordinating functional role.

The following section presents an overall view of Jean-Baptiste Say's theory of production and distribution. Specific attention is then focused on the entrepreneur as a coordinator – his main functional role in production. The entrepreneur's income, as a special aspect of Say's general distribution theory, is then analyzed in greater detail.

Say's overall theory of production and distribution

Say, following Adam Smith, envisaged three agents of production: 'the means indispensably necessary for the creation of a product: viz. human industry; the capital or value which serves for that purpose; the land and other natural agents which contribute to it.'[6] Capital includes physical capital (tools and implements) and money capital ('advanced' wages). Natural agents include powers 'offered spontaneously by nature: the soil, the air, the rain and the sun, wherein mankind bears no part, but which nevertheless concurs in the creation of the new product'.[7]

Although capital and natural agents are recognized as indispensable, the real key to production lies in labor – human industry. Say analyzes human industry from two distinct viewpoints. First, he categorizes human industry by its actual application in the economy. Thus agricultural industry occurs where human industry is 'limited to the bare collection of natural products' or when man has 'by the cultivation of the earth, and by means of seeds, induced and assisted nature to produce'. The manufacturing industry 'consists in giving to the product of another industry a greater value, by the new forms which we give to it, by the changes which it is made to undergo'. A final means of production occurs 'by buying a product in one place, where it is of less value, and conveying it to another, where it is of greater value. This is the work of Commercial Industry.'[8]

Say's second division of human industry focuses on the functional roles labor performs in the productive process. Once again, he makes a tripartite division, analyzing theory, application, and execution:

> The first step towards the attainment of any specific product, is the study of the laws and course of nature regarding that product. The next step is the application of this knowledge to a useful purpose. The last step is the execution of the manual labour, suggested and pointed out by the two former operations.'[9]

All products are produced by the combined efforts of these three functions of human industry. In addition, Say identifies the actors who carry out each particular function:

> One man studies the laws and conduct of nature; that is to say, the philosopher, or man of science, of whose knowledge another avails himself to create useful products; being either agriculturist, manufacturer, or trader; while the third supplies the executive exertion, under the direction of the former two; which third person is the operative workman or labourer.'[10]

Say's double tripartite division of human industry in his theory of production is illustrated in Figure 1.1.

The final product can be agricultural, manufactured, or commercial – making the entrepreneur an agriculturist, manufacturer, or trader, respectively. In every case, the entrepreneur plays a key role in the production process, a role which will be further analyzed shortly.

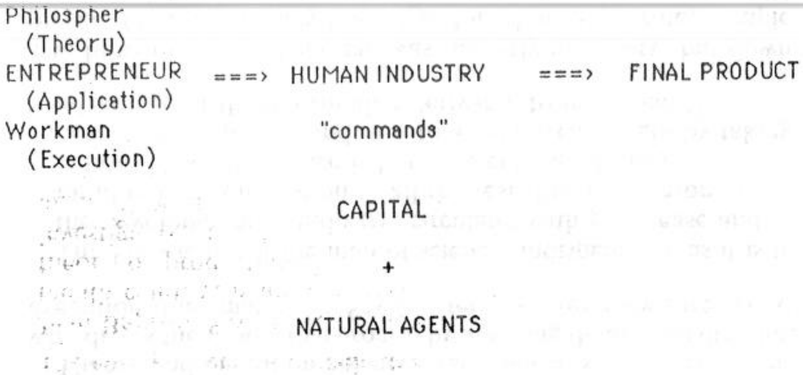

Figure 1.1 Say's production theory

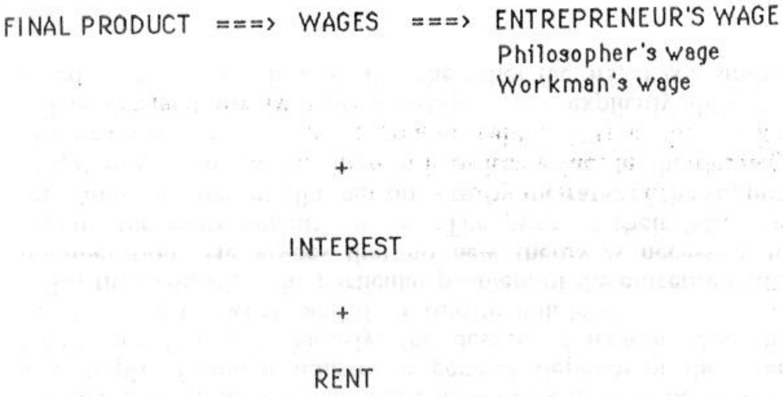

Figure 1.2 Say's distribution theory

Say's distribution theory is based on a straightforward extension of supply and demand into the three input markets. The equilibrium wage for each factor of production is determined by the forces of supply and demand. The entrepreneur is the source of demand in the factor market: 'he is the organ of a demand for all the productive agency applicable to this object, and thus, furnishes one of the bases of the value of that agency.'[11] The supply curves of the particular factors are developed in greater detail. Human industry, for example, is supplied in greater or lesser quantities based on the degree of danger or trouble, the regularity or irregularity of the occupation, and the necessary degree of skill or talent.[12]

Thus from the revenue gained by the sale of the product, the various productive agencies are repaid. Note that once again, the entrepreneur plays a crucial role: on the distribution side, he is responsible for paying the productive factors and ensures that total revenue is exactly exhausted (Figure 1.2).

Thus Say's theories of production and distribution are shaped by the classification of various productive factors and their returns. A more detailed analysis of the entrepreneur's role in Say's distribution theory will be conducted after an examination of the entrepreneur as the key factor in production.

The functional role of the entrepreneur in production

Given the three major agencies of production (human industry, capital, and natural agents), we have seen that Say focused on human industry as the key input. A further functional division separated this factor of production into scientist, entrepreneur, and workman. But these are not of equal importance; Say's emphasis clearly lay on the entrepreneur.

Theory and execution are necessary, but it is the entrepreneur who drives the productive process by applying theory and directing execution. Information, in Say's system, is essentially a free good:

> The knowledge of the man of science, indispensable as it is to the development of industry, circulates with great ease and rapidity from one nation to all the rest. For this reason, a nation, in which science is but little cultivated, may nevertheless carry its industry to a very great length by taking advantage of the information derivable from abroad.[13]

The function of the workman was similarly necessary, but downplayed. On the generally low wages for labor, Say wrote, 'Simple, or rough labour may be executed by any man possessed of life and health; wherefore, bare existence is all that is requisite to insure a supply of that class of industry.'[14]

The key to production is the combining function of the entrepreneur. In agricultural, manufacturing, or commercial industry, someone must command the necessary resources and organize the productive process: coordination, supervision, and decision-making are functions filled by the entrepreneur.

> It was further requisite [in addition to knowledge], that a manufacturer should have been found, possessed of the means of reducing the knowledge into practice; who should have at first made himself master of all that was known of that particular branch of industry, and afterwards have accumulated, or procured, the requisite capital, collected artificers and labourers, and assigned to each his respective occupation.[15]

For Say, the entrepreneur's coordinating function is made difficult by the uncertainty of the future. Uncertainty implies that not all applications of knowledge in the production of a product are assured success. The entrepreneur must choose which course of action to take; he must exercise judgment:

> He is called upon to estimate, with tolerable accuracy, the importance of the specific product, the probable amount of the demand, and the means of its production: at one time he must employ a great number of hands; at another buy or order the raw material, collect labourers, find consumers, and give at all times a rigid attention to order and economy.[16]

In addition, uncertainty implies some measure of disutility from risk-taking must be borne. Say did not emphasize this aspect, merely noting that 'the adventurer may, without any fault of his own, sink his fortune, and in some measure his character'.[17]

By giving the entrepreneur the function of coordination, Say placed the entrepreneur at the crux of the market system. Say viewed the entrepreneur as the center to which many different groups were joined:

> He is the link of communication, as well between the various classes of producers, one with another, as between the producer and consumer. He directs the business of production, and is the centre of many bearings and relations.[18]

Clearly, without this central processing unit, the market could not operate. Decision-making (or judgment) and risk-taking are necessary and dominant operations which the entrepreneur performs in the productive process. But the real key to entrepreneurship is its role in coordinating the desires of different constituencies and keeping the entire system from spinning out of control. As we will see in the next section, Say used the entrepreneur as coordinator to play a central role in the distribution of earnings from the final product to each factor of production.

The entrepreneur's remuneration in Say's theory

For Say, all productive services are remunerated according to the laws of supply and demand. In general, the demand for human industry is a function of product demand: 'When the demand for any product whatever, is very lively, the product agency, through whose means alone it is obtainable, is likewise in brisk demand.'[19] The supply of human industry, in general, depends on the three factors mentioned previously: the degree of irksomeness, the steadiness of the work, and the requisite skill level.

Say then considers the particular problem of the entrepreneur's remuneration. He argues that no new theory is necessary to explain the entrepreneur's wage: 'The price of their labour is regulated, like that of all other objects, by the ratio of the supply, or quantity of that labor thrown into circulation, to the demand or desire for it.'[20]

The demand for entrepreneurship is not explicitly differentiated. We can assume that, like the other factors, it is a simple function of product demand. The supply of entrepreneurship, however, is discussed in greater detail. Say focuses on the limits to supply; there are, in modern language, barriers to entry facing the prospective entrepreneur.

> Not that he must already be rich; for he may work upon borrowed capital; but he must at least be solvent, and have the reputation of intelligence, prudence, probity and regularity; and must be able, by the nature of his connexions, to procure the loan of capital he may happen himself not to possess. These requisites shut out a great many competitors.[21]

Second, entrepreneurial labor requires

> a combination of moral qualities, that are not often found together. Judgement, perseverance, and a knowledge of the world, as well as of business. . . . [The entrepreneur] must possess the art of superintendence and administration. There are a number of obstacles to be surmounted, of anxieties to be repressed, of misfortunes to be repaired, and of expedients to be devised. Those who are not possessed of a combination of these necessary qualities, are unsuccessful in their undertakings; their concerns soon fall to the ground, and their labour is quickly withdrawn from the stock in circulation.[22]

A final limit to the available supply of entrepreneurship is sheer bad luck: 'The adventurer may, without any fault of his own, sink his fortune, and in some measure his character; which is another check to the number of competitors, that also tends to make their agency so much the dearer.'[23]

Thus the entrepreneur's income is a function of financial position (or 'connexions'), various personal qualities, and sheer luck. These limits on supply give the entrepreneur a wage higher than that of the other factors. His total return is composed of a wage for coordinating and decision-making services, interest for capital supplied (see below for a discussion of Say's distinction between entrepreneur and capitalist), and a premium for risk-bearing. Just as the emphasis lay on coordination when analyzing the entrepreneur's productive role, the wage payment is stressed as the dominant component of the entrepreneur's income.

As for how the entrepreneur actually receives his payment, Say utilizes a residual theory of profit. The entrepreneur hires the factors (knowledge and manual labor, capital, and natural agents) and remunerates them for their efforts (wages, interest, and rent, respectively) from the sale of the product. The residual is the

entrepreneur's return – in equilibrium, exactly equal to the entrepreneur's wage determined by the forces of supply and demand.

If, after the entrepreneur pays himself the market wage, a surplus still remains, 'the producers of this kind of product become more numerous, and their competition will cause the price of the product to fall'. If revenues cannot cover costs, 'he loses, if he has anything to lose: or if he has nothing, those lose who have given him their confidence'.[24]

Clearly, Say has found yet another place where the entrepreneur must play a central, coordinating role. The entrepreneur is the agent who collects the receipts from the sale of the product and distributes them to the contributing factors of production. According to Say, competition from other entrepreneurs guarantees that no single entrepreneur can 'overpay' himself. Once again we see the entrepreneur at the center of the storm, coordinating the many bits of disjointed pieces into a stable whole.

In analyzing the entrepreneur's productive role, Say was the first to focus on coordination. In his distribution theory, Say had another original contribution: he was the first to explicitly distinguish the entrepreneur from the capitalist.

> To Say it was essential to make this distinction, since in his view it was the entrepreneur who was the active agent in production, and who from his pivotal position in the productive process exercised the most important influence on the distribution of wealth. This was not the role of the capitalist, nor for that matter, that of the landowner, or of the labourer.[25]

This was a distinct break from the classical system of production which was organized around class divisions. The entrepreneur belonged to no particular social class. For Say, entrepreneurship is a distinct functional role that must be performed for production to take place. It can be combined with other functional roles in one person, but the functions and returns can be theoretically separated. Thus Say's typical entrepreneur provided some of his own capital and received an interest payment, but not in his role as entrepreneur, since interest accrued only to the productive agency capital. Importantly, Say's logical, clear analysis allowed him to distinguish correctly between entrepreneur and capitalist.

Jean-Baptiste Say, writing in the early nineteenth century, developed a quite sophisticated theory of production and entrepreneurship. Human industry, capital, and natural agents are the three great agencies of production. However, a heavy emphasis is placed on labor, which is subdivided into theory, application, and execution. The work of application, carried out by the entrepreneur, is seen as the driving force in production. His functions include coordination (the key role), decision-making, and risk-bearing. The entrepreneur's main function is that of a central processing unit: information from a wide variety of sources flows in to the center of the firm where it is processed and where decisions are made. Say argues that this coordinating role is indispensable in the production process.

Say's distribution theory stressed the factors that limit the supply of entrepreneurship (high entry costs, requisite qualities, and random events) which, in turn, accounted for the entrepreneur's usually high returns. In terms of functional role in distribution, it was the entrepreneur who paid the factors their market-determined input prices, keeping the residual as his remuneration. Here we see once again a central place reserved for the entrepreneur. Finally, although the entrepreneur's income includes a return for capital personally supplied, Say argued this was not a return to the entrepreneur *qua* entrepreneur, but as capitalist.

It is not surprising, given Say's background in the business world (he ran a spinning factory), that the entrepreneur would reign supreme in a theory of production and distribution. Say's research led to the elevation of the entrepreneur to a crucial role in the productive and distributive processes (although Say's ideas on entrepreneurship went largely unnoticed by English classical economists, his influence can be seen in the work of future economists such as Leon Walras and Joseph Schumpeter). His work also made clear the separation of the entrepreneur from the capitalist. Say will be remembered for a clear, systematic exposition of entrepreneurship as coordination.

The entrepreneur as arbitrageur

Israel Kirzner has been at the forefront of the recent revival of Austrian economics. A student of Ludwig von Mises, Kirzner developed a theory of the entrepreneur as arbitrageur and equilibrating agent. Because of his Austrian perspective, a proper understanding of Kirzner's entrepreneur requires a review of the Austrian system. We will limit our discussion, however, to the aspects of Austrian theory from which Kirzner draws most heavily.

Kirzner has written several books and many articles. His most important works on entrepreneurship include: *Competition and Entrepreneurship* (1973) and two collections of essays, *Perception, Opportunity and Profit* (1979) and *Discovery and the Capitalist Process* (1986).

In recent years, a debate has arisen in the Austrian camp over Kirzner's alleged neglect of uncertainty considerations.[26] For our purposes, it is only important to note that there are those who believe uncertainty to be an unnecessary complication (for example, Jack High). Thus the theory of the entrepreneur as arbitrageur lives on. Kirzner's latest writings, perhaps in an attempt to satisfy his critics, include the effects of uncertainty on the entrepreneurial role. However, the basic Kirznerian entrepreneurial role remains unchanged. The prime entrepreneurial characteristic is not uncertainty-bearing – nor anything at all related to uncertainty – but the ability to perceive profit opportunities and act upon them. For this reason, the entrepreneur as arbitrageur deserves its own place in our taxonomy of entrepreneurial theories.

In the next section, some basic tenets of the Austrian tradition are briefly examined, providing the background necessary to understand Kirzner's theory of entrepreneurship. Kirzner's concept of the entrepreneur's functional role in the market system is then discussed. Finally, we examine the nature and function of the entrepreneur's compensation.

The market process and human action

A detailed analysis of Austrian economic thought is outside the scope of our inquiry. A brief review of two fundamental ideas, the market process and human action, are necessary, however, in order to examine Kirzner's entrepreneur as arbitrageur. Orthodox economic theory is useless, Austrians believe, because of its obsession with equilibrium.[27] The focus of modern microeconomic theory is on the values of equilibrium prices and quantities. Comparative statics, the dominant means of analysis, is the simple comparison of old and new equilibrium states after a 'shock' (for example, an exogenous change in tastes or technology). 'In all this the emphasis is on the *prices* and *quantities* and, in particular, on these prices and quantities as they would emerge under equilibrium conditions.'[28] All the while, 'perfect knowledge' is assumed. Disequilibrium occurs if the quantity demanded does not equal the quantity supplied. In such a case, price will adjust until equilibrium is reached.[29]

This is all a very familiar story, but skeptics believe it misses the crucial issues. Critics argue that too many interesting problems are neglected by the analysis of equilibrium states. One such group, the Austrian school led by Friedrich von Hayek and Ludwig von Mises, emphasizes the market system as a process, rather than a determined price-quantity configuration. For the Austrian school, the market is still made up of consumers and producers seeking to make mutually advantageous exchanges. However, an equilibrium solution is far down the road. The goal is to find how disappointments experienced in a disequilibrium market change individual decisions in such a way that there is a tendency toward equilibrium. Austrians believe we should examine

> how the decisions of individual participants in the market interact to generate the market forces which compel changes in prices, outputs, and in methods of production and the allocation of resources. . . . The object of our scientific interest is these alterations themselves, not (except as a matter of subsidiary, intermediate, or even incidental interest) the relationships governing prices and quantities in the equilibrium situation.[30]

After a given exchange is made, the agents may, in light of new information, see a better course of action. New information is gained by exposure to the decisions of others. In the next period, revised decisions will be made, leading to different exchanges.

> In other words, even without changes in the basic data of the market (i. e., in consumer tastes, technological possibilities, and resource availabilities), the decisions made in one period of time generate systematic alterations in the corresponding decisions for the succeeding period. Taken over time, this series of systematic changes in the interconnected network of market decisions constitutes the *market process*.[31]

It should now be clear why the Austrians reject equilibrium analysis: the market process is nonexistent in an equilibrium state. By definition, there is no tendency to change; all expectations are fulfilled.

If the market process is the Austrian answer to equilibrium, then human action is their answer to optimization theory. To the Austrians, a wrong turn was taken when orthodox economics accepted Lionel Robbins' definition of economics as the allocation of scarce resources among competing ends.[32] The key to orthodox economics lies in the assumptions of known means and given ends. Invariably, known variables are chosen to optimize a given objective function (for example, utility or profit). This results in the ceaseless implementation of the equimarginal principle, that is, an arrangement which guarantees an optimum position. Consumers set marginal utility equal to marginal cost when deciding

how much of a commodity to buy; producers (be they competitors or monopolists) set marginal revenue equal to marginal cost when deciding how much to produce; workers set marginal income equal to marginal disutility when deciding how many hours to work – the list is almost endless. Any problem of choice that has known variables and objectives can be studied using optimization theory. This, of course, is one of the most powerful features of orthodox economics.

Austrians, however, argue that disequilibrium destroys this neat framework, since the plans of the calculating optimizer are often not realized. For example, given an expected price configuration and cost constraint, the firm chooses an input vector that maximizes output. However, upon arrival at the market, the firm finds surpluses and shortages everywhere, destroying its meticulously laid plans. Obviously, expectations will be revised (even orthodox economic theory tells us this), but the question is, 'How?' Austrians argue that this question is the truly important one, swamping notions of marginal calculations.

The Austrian answer is found in the phrase 'human action'. Mises' great work, *Human Action*, can be viewed as a response to Robbins' definition of the economic problem. Mises 'recognizes that men are not only calculating agents but are also *alert to opportunities*'.[33] Since the world is in a state of disequilibrium, opportunities are constantly being recognized and acted on. In any given period, economic man is more concerned with acquiring information and revising his plans than with determining his optimum market basket. Thus human action is the key to understanding the market process.

The modern Austrian economics revival is a response to the perceived inapplicability of orthodox microeconomic theory. Austrians argue that the equilibrium and allocative decision-making framework badly misses the point: 'The real economic problems in any society arise from the phenomenon of unperceived opportunities.'[34] Thus the better alternative is to focus on the market process – how and why the market tends toward equilibrium. The latter question is explained by a view of economic man focusing on human action – the notion that economic man calculates, but, much more importantly, that he is constantly alert to new opportunities.

The functional role of the entrepreneur

Once we understand Kirzner's Austrian background, the functional role of his entrepreneur is relatively easy to grasp.

In a nutshell, Kirzner places the power of human action on entrepreneurs. They, by constantly being on the alert for new opportunities, drive the market process. Mises argued that everyone possessed the capacity for human action. Kirzner has limited those who are alert to opportunities to a select group, called entrepreneurs, in order to highlight the functional role of entrepreneurship as alertness to opportunity.

For Kirzner, disequilibrium is characterized by ignorance. This ignorance is directly responsible for the existence of profitable opportunities. Expectations are not realized because of mistaken perceptions about the environment. Kirzner gives entrepreneurs the power to reassess previous decisions in the light of new information; that is, they have the ability to learn. For example, suppose a consumer is buying at a higher price than a supplier would be willing to sell. The entrepreneur, by virtue of his alertness to opportunity, can buy at the producer's reservation price and sell to the consumer by undercutting the supplier's retail price, reaping any remaining excess gain. Gradually, competition among entrepreneurs will tend to lower the price to its equilibrium position.

Kirzner, in an attempt to make perfectly clear the functional role of the entrepreneur, defines a 'pure' entrepreneur as an arbitrageur: 'The key point is that *pure* entrepreneurship is exercised only in the *absence* of an initially owned asset. . . . The "pure" entrepreneur observes the opportunity to sell something at a price higher than that at which he can buy it.'[35]

The extension to production changes nothing. The entrepreneur looks for opportunities in which he can generate an excess of total revenues over total cost (including any payments to factors he may own).

The entrepreneur is not a factor of production. He requires no special ability to carry out his function, other than the capacity for perceiving opportunity. Thus the entrepreneur fulfills no coordinating or management role in the productive process. Any special abilities needed to organize factors and choose optimum rates of inputs and outputs are unnecessary.

> All he needs is to discover where buyers have been paying too much and where sellers have been receiving too little and to bridge the gap by offering to buy for a little more and to sell for a little less. To discover these unexploited opportunities requires alertness. Calculation will not help, and economizing and optimizing will not of themselves yield this knowledge.[36]

Then what will? Why do certain people perceive opportunities and others not? Kirzner emphasizes that it is not the acquisition of information per se. There is a distinction between being alert and possessing information – it is the former that is crucial to the market process. Thus the hired expert may possess more knowledge about a particular field than the employer, yet the employer is the entrepreneur. Somehow the employer was able to perceive a profit opportunity and hired the resources (including the expert) to realize the gain. How did the employer, having less knowledge, see what the expert did not?

> We do not clearly understand how entrepreneurs get their flashes of superior foresight. We cannot explain how some men discover what is around the corner before others do. We may certainly explain – on entirely Robbinsian lines – how men explore for oil by carefully weighing alternative ways of spending a limited amount of search resources, but we cannot explain how a prescient entrepreneur realizes before others do that a search for oil may be rewarding.[37]

The entrepreneur is not a factor of production, nor does he possess special knowledge. Clearly, he is neither characterized by resource ownership (that is, a capitalist), nor product ownership. Risk-taking would be an element to be incorporated into the entrepreneurial function, but it is not necessary. In fact, the entrepreneur's only defining characteristic is alertness; his only functional role is that of arbitrageur. In this crucial part, the entrepreneur drives the market toward equilibrium. He is the moving force behind the market process.

Relative to orthodox economic theory, the Austrian story contains a slight, but important distinction. The market is always in disequilibrium, yet entrepreneurial actions generate movements toward equilibrium – an equilibrium that is never reached. Thus there is always a role for the entrepreneur as arbitrageur, endlessly driving the system toward new equilibrium positions.

The reward for entrepreneurship

For Kirzner, entrepreneurial income is defined as a return for arbitrage. The entrepreneur 'proceeds by his alertness to discover and exploit situations in which he is able to sell for high prices that which he can buy for low prices. Pure entrepreneurial profit is the difference between the two sets of prices.'[38]

Yet profit should not be seen as a return to a productive service of some kind: profit is 'something obtainable for nothing at all'.[39] There is no relationship between the profit magnitude and entrepreneurship. It is nonsensical to argue that more entrepreneurship leads to greater profits, since 'entrepreneurship cannot usefully be treated simply as a resource, similar in principle to the other resources available to an economic system'.[40]

It is important to note that the definition of entrepreneurial gain depends very much on one's viewpoint. According to Kirzner, 'the correct theoretical characterization of a particular receipt depends on the character of the decision responsible for that receipt'.[41] A gain earned by selling a resource, for example, may or may not be a profit. If the resource was initially bought in order to be sold at a later date, a profit is earned. If, however, we focus our attention on the mere selling of the resource, the transaction is nothing but the sale of something owned. It is a very real possibility that a particular receipt may be viewed as profit and as something other than profit. The defining characteristic of profit is that it is a result of an entrepreneurial decision to take advantage of a perceived opportunity. Since such a result may be the culmination of a long sequence of decisions, the decision responsible for the gain may be ambiguous. Thus Kirzner quite consistently argues that monopoly gains are an entrepreneurial profit if viewed as the return from the initial capturing of the monopoly position.

To this point, it seems the Austrians view profit as quite inconsequential. After all, it bears no particular relation to entrepreneurship; nor does it 'repay' a productive agency for its services. A more correct way to characterize the Austrian position is that *ex post* profits are relatively meaningless; *ex ante* profit considerations, however, are crucial. Profit is the prime objective of the entrepreneur and the incentive that motivates entrepreneurship.

> We do not know precisely how entrepreneurs experience superior foresight, but we do know, at least in a general way, that entrepreneurial alertness is stimulated by the lure of profits. Alertness to an opportunity rests on the attractiveness of that opportunity and on its ability to be grasped once it has been perceived.[42]

Thus the anticipation of gain, not the realization itself, is the crucial factor. Entrepreneurs, motivated by human action, react to profit opportunities because they anticipate a gain. The larger the prospective gain, the more aware entrepreneurs will be. Profit's role is that of an incentive for entrepreneurial action; distributive considerations are, on the whole, largely ignored.

Finally, it need hardly be said that interest premiums for risk-bearing and the like play no part in Kirzner's entrepreneurial profit theory. Profit is not a functional return or a reward for past performance; it is a call to action or the lure of future success.

In summary, Kirzner views entrepreneurial income as a reward for arbitrage. Profit is defined by the decision that resulted in revenue. If it was an entrepreneurial decision (acting on a perceived opportunity), the revenue is profit; if not (a mere sale of an asset), it is not. But these distinctions are not of primary importance and the distributive aspect of the market process is largely neglected. The real function of profit lies in the lure it presents for entrepreneurs. In this role, profit ensures the working of the market process – the tendency toward equilibrium.

To conclude, Israel Kirzner gains a place in our categorization of functional roles by casting the entrepreneur as an arbitrageur. By this Kirzner does not mean what, to an orthodox economist, would be the 'simple' task of equilibrating supply and demand in a perfect market. Kirzner's story must be told from its proper perspective, that of the Austrian economics tradition where the focus is on disequilibrium and human action. Human action – man's constant alertness to the opportunity to improve his position – drives the market process, the way in which plans are revised and ignorance is lessened.

Kirzner gives the entrepreneur the power of human action, the ability to learn. The entrepreneur's role is to spot opportunities for gain in the disequilibrium environment. The entrepreneur takes advantage of situations where the wrong price prevails (where buyers or sellers are frustrated), where more than one price exists, and where prices of inputs are out of line with their corresponding product prices.

By being alert to opportunities, the entrepreneur in Kirzner's system is the motivating force behind the market process. He is an arbitrageur, an equilibrator, but not in the trite sense of the term. The alertness required is not easily explained and there is an unknown, mystical aura about it.

If the entrepreneur drives the market process, profit drives the entrepreneur. More correctly, it is the expectation or anticipation of gain that stimulates the entrepreneur to action. The entrepreneur remains ever alert to opportunity in the hope that he will be rewarded with a windfall return.

By utilizing the Austrian notions of market process and human action, Kirzner has constructed a viable and appealing account of the entrepreneur as arbitrageur. By constantly closing the gaps resulting from ignorance and lack of information, the entrepreneur is responsible for an ever more smoothly working market. The entrepreneur as arbitrageur plays the crucial role of equilibrating agent and helps explain why markets tend toward equilibrium.

The entrepreneur as innovator

Joseph A. Schumpeter is the originator of one of the most colorful, sweeping theories of entrepreneurship. His entrepreneur is cast as innovator and dynamic agent, the engine of the capitalist economy. For Schumpeter, entrepreneurial actions are the ultimate cause of business cycles and economic development in general.

Over a period of 40 years, Schumpeter was an active and prolific writer. His major works on the theory of the entrepreneur include *The Theory of Economic Development* (originally published in 1911 and translated into English in 1934), *Business Cycles* (1939), and *Capitalism, Socialism and Democracy* (1942).

Unlike Say, Schumpeter's theories have never had any trouble being recognized and discussed. Schneider praises Schumpeter's theory as

> one of the most profound and persuasive of the available analyses of the development process in general and of capitalistic free-market systems in particular. . . . After more than half a century, this work [*The Theory of Economic Development*] has come to be counted – along with Karl Marx's *Capital* – among the foundations which no theory of economic development can ignore.[43]

Schumpeter accepted general equilibrium as the eventual result of a static market system. He had no quarrel with static allocation theorems and the repeated application of optimization theory in a static environment. He argued, however, that the important questions had already been answered and, thus, static theory would not lead to further insights. A shift in problem orientation was needed; the truly interesting problems lay in the process of change. Schumpeter believed the market system has an inherent tendency toward change and that the dynamic attributes of capitalism were its most useful characteristics. Finally, he argued that it is the entrepreneur who plays a crucial role in generating change in a market system. Thus the chain is complete: the hallmark of capitalism is change which, in turn, is caused by the entrepreneur.

The next section will analyze the circular flow of Schumpeter's general equilibrium system. We will focus on the productive and distributive aspects of the economy in a full, competitive general equilibrium. We then turn to an analysis of Schumpeter's theory of entrepreneurship where special attention is focused on the entrepreneur's functional role in the theory of economic development. Finally, the theory of entrepreneurial profit – a result of development – is discussed in detail.

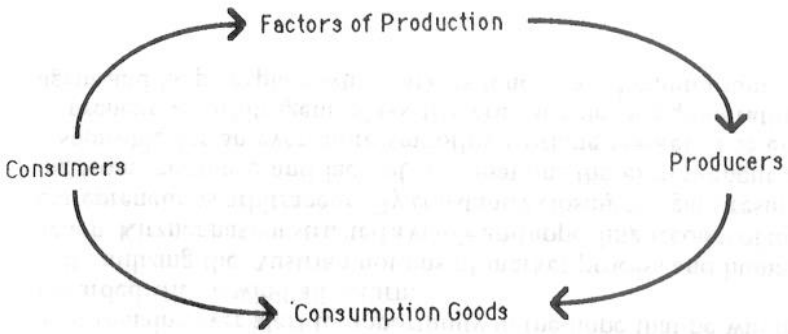

Figure 1.3 The circular flow

The circular flow

Schumpeter examines the phenomenon of economic development by contrasting a progressive with a non-developing economy. Essentially, Schumpeter's exposition of the stationary state, the circular flow, is a non-mathematical recounting of a Walrasian general equilibrium. He does include an extra dimension, the circular flow through time (that is, a dynamic general equilibrium), in order to compare a static with a dynamic economy.

The static general equilibrium model is built on the exchange of goods for productive services between producers and consumers. In a static sense, the circular flow is depicted in Figure 1.3.

All goods and services in the system are classified, following Menger, according to their 'order'. First-order goods are directly used by the consumer, that is, consumption goods. Second-order goods are 'goods from combinations of which consumer goods immediately originate . . . and so on, in continually higher and more remote orders'.[44] A good is ranked in the highest of the orders in which it ever appears: 'Accordingly labor is, for example, a good of the highest order, because labor enters at the very beginning of all production, although it is also to be found at all other stages'.[45]

Ascending the hierarchy of goods, the ultimate elements in production will eventually be found. 'That these ultimate elements are labor and gifts of nature or "land", the services of labor and of land, requires no further argument. . . . We can resolve all goods into "labor and land" in the sense that we can conceive all goods as bundles of the services of labor and land.'[46]

Labor can be further grouped into two categories: directing and directed labor. Directing labor stands higher in the productive process hierarchy; it directs, coordinates, and supervises land and directed labor. 'This direction and supervision of the "executing" labor appears to lift the directing labor out of the class of other labor.'[47] In addition, directing labor 'has something creative in that it sets itself its own ends'.[48] For these reasons, Schumpeter grants directing labor the position of a third ultimate productive agency. The distinguishing feature is the decision-making function of directing labor. The key, however, in the circular flow is that these decisions have been made the same way countless times before.

The director must make some resolutions and independently decide some questions, but he does so on the basis of past learning and experience. In the circular flow, no new means of reaching an end are attempted.

> [The director] acts, not on the basis of the prevailing conditions of things, but much more according to certain symptoms of which he had learned to take heed, especially of the tendencies immediately showing in the demand of his customers. And to these tendencies he yields step by step, so that only elements of minor significance can ordinarily be unknown to him.[49]

If directing labor, directed labor, and land are the ultimate productive factors, then the next question is: 'On what basis does their remuneration depend?' Schumpeter follows the straight marginal productivity imputation theory. Productive services receive value from the value of the product. A given individual unit of a factor receives an income based on the product's value and the factor's marginal productivity. Furthermore, in a perfectly competitive circular flow, the factors are guaranteed the full return of the value of the total product. In other words, factor price payments equal total revenues. The theory of production and distribution in the circular flow can be more fully explained by Figure 1.4.

Once again, the key to understanding Schumpeter's concept of general equilibrium or the circular flow lies in the repetitive, routine nature of decision-making. Consumers buy roughly the same goods, in the same quantities, the same way; producers make the same output, in the same quantities, the same way.

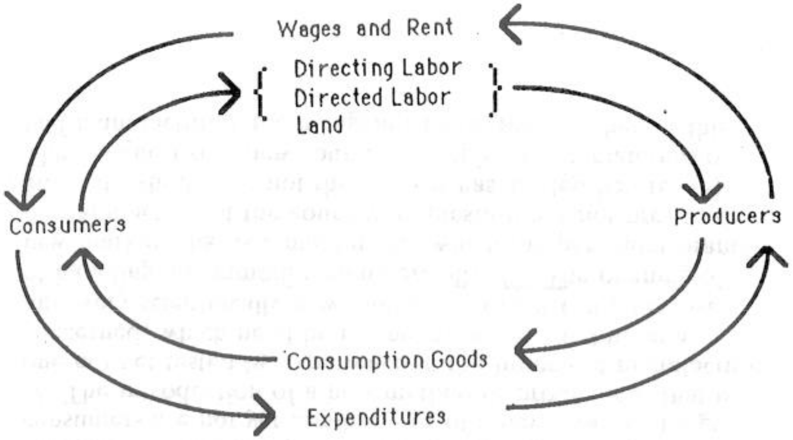

Figure 1.4 The full circular flow

Consumers make the same expenditures and producers pay the same wages and rents. The system is marked by equilibrium, that is, no tendency to change.

Schumpeter then turns to the question of time. He admits that consumption goods in general are not produced directly by the ultimate productive factors. Typically, producer goods play an intermediary role in the productive process. Thus consumption goods require two economic periods for their completion.

Without becoming deeply involved in a detailed analysis, Schumpeter's basic problem is the existence of current productive power being exchanged for future consumption goods. The classical economists solved this problem by applying the notion of 'advanced' wages. This creates another necessary agency in production, usually referred to as capital. Schumpeter argues, however, that the circular flow is timeless. In period t, the consumer receives consumption goods produced in period t in exchange for productive services. Some of these services are used to make producer goods for period $t+1$; the rest are used in conjunction with producer goods from $t-1$ to make consumption goods for period t. In the next period, the process repeats itself, as shown in Table 1.1. Thus, Schumpeter ingeniously sidesteps the problem of time in the productive process.

Therefore, workers and landlords always exchange their productive services for present consumption goods only, whether the former are employed directly or only indirectly in the production of consumption goods. There is no necessity for them to exchange

Schumpeter's Dynamic Circular Flow		
Period t-1	Period t	Period t+1
	CONSUMPTION	
t-1 consumption goods	t consumption goods	t+1 consumption goods
	PRODUCTION	
t-1 consumption goods from t-1 productive services and t-2 producer goods	t consumption goods from t productive services and t-1 producer goods	t+1 consumption goods from t+1productive services and t producer goods
t-1 producer goods from t-1 productive services	t producer goods from t productive services	t+1 producer goods from t+1 productive services

Table 1.1 Schumpeter's circular flow over time

their services of labor and land for future goods, for promises of future consumption goods, or to apply for any 'advances' of present consumption goods. It is simply a matter of exchange, and not of credit transactions. The element of time plays no part. All products are only products and nothing more.[50]

Using his notion of a timeless yet moving circular flow, Schumpeter argues that the notion of a capital fund is superfluous. By logical extension, in the circular flow, there is no return to capital: 'in each period all the consumption goods on hand will go to the services of labor and land employed in this period; hence all incomes are absorbed under the title of wages or rent of natural agents.'[51]

The circular flow is a self-perpetuating mechanism. Individual

businesses are places where products are made and revenues are divided among the productive services. The necessary requirements for production, in the ultimate sense, are directed labor, land, and directing labor (which serves to combine the other two). The key is that the function of directing labor 'is performed in every period mechanically as it were, of its own accord, without requiring a personal element distinguishable from superintendence and similar things'.[52] Distribution of income is based on marginal utility (product value) and marginal productivity considerations. Against this backdrop, Schumpeter introduces the entrepreneur as the dynamic agent in development. To the examination of this process, we now turn.

The theory of economic development

Given an understanding of the circular flow, Schumpeter's theory of economic development is straightforward. Development is defined as endogenous change – wars, acts of God, and the like are excluded. In addition, 'mere growth' (the increase of population and wealth) is not development.

Schumpeter defines development in terms of radical disturbance.

> It is spontaneous and discontinuous change in the channels of the flow, disturbance of equilibrium, which forever alters and displaces the equilibrium state previously existing. Our theory of development is nothing but a treatment of this phenomenon and the processes incident to it.[53]

For Schumpeter, development is characterized by a variety of internal changes.

> This concept covers the following five cases: (1) The introduction of a new good – that is one with which consumers are not yet familiar – or of a new quality of a good. (2) The introduction of a new method of production, that is one not yet tested by experience in the branch of manufacture concerned, which need by no means be founded upon a discovery scientifically new, and can also exist in a new way of handling a commodity commercially. (3) The opening of a new market, that is a market into which the particular branch of manufacture of the country in question has not previously entered, whether or not this market has existed before. (4) The conquest of a new source of supply of raw materials or half-manufactured goods, again irrespective of whether this

> source already exists or whether it has first to be created. (5) The carrying out of the new organization of any industry, like the creation of a monopoly position (for example through trustification) or the breaking up of a monopoly position.[54]

The key phrase in understanding Schumpeter's theory of economic development is 'new combination', that is, innovation. It is the new good, new method of production, new market, new source, or new organization that defines economic development. The new combination is not defined in terms of slight, incremental change, but as radical, discontinuous breaks from the past. New combinations occur regardless of institutional make-up. Under the free market system, it is the entrepreneur who carries out new combinations, he 'is the key figure and champion of any economic development'.[55]

Established firms are neither necessarily nor typically the bearers of change. In addition, innovation never takes place by acquiring idle productive factors. Currently employed factors must be induced away from their present employment. Therefore, the carrying out of new combinations implies command over means of production, which raises the problem of procurement of these means. Entrepreneurs are aided in this endeavor by the banker (or capitalist) who provides credit.

> The essential function of credit in our sense consists in enabling the entrepreneur to withdraw the producer's goods which he needs from their previous employments, by exercising a demand for them, and thereby to force the economic system into new channels.[56]

Obviously, the capitalist is unnecessary if the entrepreneur possesses or can acquire the necessary means independently. But this is not an integral part of the entrepreneurial role, nor the 'fundamentally interesting case'.

Given the circular flow, the entrepreneur, and credit, the process of development can be traced. Schumpeter focuses on the effects of the shock of carrying out a new combination, termed 'creative destruction' in later work. Unfortunately, a detailed analysis of Schumpeter's theory is outside the scope of this work. Suffice it to say that the crucial point is the wavelike motion of this process: innovations come in bunches or 'swarms'. The first entrepreneur smooths the road and is followed by 'imitators' who carry the 'boom' further. Eventually, due to a variety of factors, the wave dies and the system falls into a recession, then settles into a new equilibrium. Thus the entrepreneur in his innovating role is the cause of business cycles and economic development.

It must be emphasized that although direction and supervision are necessary, it is the direction and supervision of new combinations that characterize the entrepreneur's function. Schumpeter argues that previous definitions of the entrepreneurial role focusing on superintendence and combination of factors are inadequate at best, and often lead to error. 'Mere management', decision-making based on established grounds, is not part of the entrepreneurial function. It fails to 'bring out what we consider to be the salient point and the only one which specifically distinguishes entrepreneurial from other activities' – that is, the carrying out of a new combination.[57] In the circular flow, decisions are made in a routine manner. It is the very special function of the entrepreneur to exude leadership in his path-breaking role. Leadership in the circular flow is superfluous. We speak of the entrepreneurial function because it is a special kind of supervising, coordinating function; it is supervision and coordination over new, untried methods.

The entrepreneur, in exercising his function, is met with severe obstacles. Outside the circular flow, he is forced to act in areas where previous experience is no guide.

> Here the success of everything depends upon intuition, the capacity of seeing things in a way which afterwards proves to be true, even though it cannot be established at the moment, and of grasping the essential fact, discarding the unessential, even though one can give no account of the principles by which this is done.[58]

Second, there is an inherent, instinctive resistance to change. By human nature, we are reluctant to try something new even if the change in itself presents no particular difficulties.

> A new and another kind of effort of will is therefore necessary in order to wrest, amidst the work and care of the daily round, scope and time for conceiving and working out the new combination and to bring oneself to look upon it as a real possibility and not merely as a day-dream.[59]

Finally, the social environment surrounding the prospective entrepreneur has a similar reaction against any change. To varying degrees, in all cultures, 'any deviating conduct by a member of a social group is condemned'.[60] Thus the entrepreneur must overcome the difficulty of finding the necessary cooperation.

The ideas that Schumpeter tries to convey were expressed in a different time and place by no less than Niccolo Machiavelli. In *The Prince*, the well-known Italian schemer and power-broker writes:

> It must be considered that there is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in those who profit by the new order, this lukewarmness arising . . . partly from the incredulity of mankind, who do not truly believe in anything new until they have had actual experience of it.[61]

For these reasons, the successful entrepreneur is rare indeed. Not only is the environment hostile, but the number of successful entrepreneurs is further limited by the personal qualities required: the desire 'to found a private kingdom, . . . the will to conquer, . . . the joy of creating, of getting things done, or simply exercising one's energy and ingenuity'.[62] Note that entrepreneurship is not something done on rational utility-maximizing grounds. Schumpeter's entrepreneur is a creature driven by instinctive and non-calculating motives.

Before concluding our review of what Schumpeter's entrepreneur is, we must analyze what he is not. The entrepreneur is most certainly not a risk-bearer: 'Risk obviously always falls on the owner of the means of production or of the money-capital which was paid for them, hence never on the entrepreneur as such.'[63] The entrepreneur, once again, is not just anyone who supervises, coordinates, or manages. The key is doing these things in a novel fashion. The entrepreneur is also to be distinguished from the inventor. Although invention must precede innovation, it is the actual implementation – the carrying out – of new combinations that characterizes the entrepreneur's role. Finally, the entrepreneur cannot be defined by his position in the class hierarchy. His is a purely functional role devoid of any class connotation.[64]

By contrasting a developing economy against the backdrop of the circular flow, Schumpeter is able to define precisely the entrepreneurial function. He basically refines Say's notion of direction and coordination by insisting on a further requirement: the carrying out of new combinations. This is the ultimate cause of economic development.

Entrepreneurial profit

Once again, Schumpeter uses the circular flow as a tool to distinguish a particular phenomenon. In this case, entrepreneurial gain or profit is analyzed. In the circular flow, the ultimate factors (directing and directed labor and land) received the total value product (in the form of wages and rent). Factor returns were exactly determined by marginal utility and marginal productivity considerations. No surplus – profit – remained; heads of firms received 'wages of management'. In a developing economy, however, new combinations lead to profit.

'Profit' is defined simply as 'a surplus over costs. . . . It is the difference between receipts and outlays in a business.'[65] Outlays include the direct or indirect payments necessary to hire productive services, for example wages, rents, and interest (including payments for services owned by the entrepreneur in his role as laborer, landowner, or capitalist). For example, the introduction of a new combination in production implies that the new method is more advantageous than the old. Typically, the innovation results in a lower unit cost, leading to a positive difference between the prevailing equilibrium price and the new lower average cost.

Profit is the signal to imitators that above normal gains can be made. Entry and competition eventually erode the initial profit position and a new equilibrium position is reached. The key is that, although temporary, profit is a net gain, that is, 'it is not absorbed by the value of any cost factor through a process of Imputation'.[66] Profit is a true surplus, an excess over the sum of the factor payments. The profit falls to those who introduced the new combination. (Schumpeter makes clear, however, that this need not be the case. In a non-exchange or command economy, profit can be channeled away from the entrepreneur. He also discusses the ramifications this has for taxation under a market system – see below.)

What exactly does the entrepreneur contribute to the productive process?

> Only the will and the action: not concrete goods, for they bought these – either from others or from themselves; not the purchasing power with which they bought, for they borrowed this – from others or, if we also take account of acquisition in earlier periods, from themselves. And what have they done? They have not accumulated any kind of goods, they have created no original means of production, but have employed existing means of production differently, more

> appropriately, more advantageously. They have 'carried out new combinations.' They are entrepreneurs. And their profit, the surplus, to which no liability corresponds, is an entrepreneurial profit.[67]

The rise of entrepreneurial profit can occur by any of the five means of innovation: the creation of a new good, the introduction of a new method of production, the opening of a new market, the conquest of a new source of raw materials, or the reorganization of an industry. The entrepreneur's gain is easily distinguished from the capitalist's return. The latter's reward is interest payments, including a premium for risk-bearing. The entrepreneur contributes no concrete goods or money capital *qua* entrepreneur. It is the capitalist who must bear the brunt of failure and he is rewarded accordingly. Further, profit is not a rent. For example, the initial act of monopolistic reorganization of an industry is entrepreneurial in nature and its reward is a profit. However, once it is running smoothly, any further surplus must be 'imputed to those natural or social forces upon which the monopoly position rests – it has become monopoly revenue'.[68]

Profit has no tendency to be equalized, except at zero in the circular flow. It is not wages of management and it is not a return to 'exploitation'. Neither, on the other hand, is it a simple residuum: profit expresses the value of the entrepreneur's contribution in the productive process just as wages measure what the worker produces. 'However, while wages are determined according to the marginal productivity of labor, profit is a striking exception to this law: the problem of profit lies precisely in the fact that the laws of cost and of marginal productivity seem to exclude it.'[69] The size of profit, therefore, is not determined (as are wages) such that it just suffices to call forth the necessary quantity of entrepreneurial services. The total profit realized may be, and often is, greatly disproportionate to the needed amount. Thus profits could conceivably be taxed without impairing the market process. In addition, it explains why the industrial manager, who often fills the entrepreneurial role, can be adequately remunerated with a small share of the profit.

Schumpeter's entrepreneurial profit theory emphasizes the need for new combinations in the generation of profit. There is no surplus in the circular flow. It is only through innovation that profit arises and through imitation and competition that it disappears. Profit is a return to the entrepreneurial role, but no law as to its magnitude can be tolerably accepted. The mixing of profit and interest has led to much confusion, but it is clear, in the Schumpeterian system, that the two are separate and bear no special relationship to one another.

To conclude our discussion, Schumpeter's entrepreneurial theory, at its most fundamental level, is not difficult to understand. By contrasting the circular flow (characterized by the absence of entrepreneurship and profit) with development (defined by new combinations and the resulting profit), he is able to clearly and explicitly define the entrepreneurial role and its return.

Schumpeter's entrepreneur is the functional agent who carries out new combinations. He breaks out of established patterns, thereby disrupting the circular flow. This process of creative destruction is the means by which an economy develops. The key lies not in decision-making per se, but in decision-making that results in new combinations (new goods, different productive processes, and the like). In carrying out new combinations the entrepreneur generates profits, a surplus of receipts over outlays. Under a free market system, he reaps his excess, paying th remaining factors their respective value of the marginal products. The size of profits, as in Kirzner's theory, bears no discernible relationship to the entrepreneurial role.

Schumpeter searched for the cause of systematic, endogenous change in market economies. In the process of explaining the business cycle, Schumpeter found an entire theory of economic development. At the core of the Schumpeterian explanatory scheme lies the entrepreneur, inducing change and reactions from imitators. A single agent, the entrepreneur, is the key element in Schumpeter's theory of economic development.

The entrepreneur as uncertainty-bearer

The theories of entrepreneurship discussed above share a common characteristic: any uncertainty inherent in the economic environment is very much downplayed. Say focuses on coordination, Krizner stresses arbitrage, and Schumpeter emphasizes innovation. Though there are important distinctions drawn between equilibrium and disequilibrium, uncertainty is not a crucial issue. In the history of entrepreneurial thought, however, perhaps the most common entrepreneurial role has been that of uncertainty-bearer. This section will examine three theories of entrepreneurship that make uncertainty-bearing the distinguishing feature of enterpreneurship.

The introduction of uncertainty has several ramifications. Theorists cast the entrepreneur's main function according to a subjective interpretation of the most important effect of an uncertain environment. The earliest entrepreneurial theory, credited to Richard Cantillon, presents the entrepreneur as speculator. Cantillon stressed the need to overcome uncertainty for market exchanges to take place. Frederick Hawley perceived the most important impact of uncertainty to be manifested through the ownership of the product. Thus his entrepreneur performs the economic function of uncertainty-bearing through product ownership. Finally, Frank Knight sees decision-making when consequences are unforeseeable as the crucial function in an uncertain environment – a function performed by the entrepreneur.

These theories all have uncertainty at their core. Without an uncertain environment, the entrepreneur would disappear. This is untrue of the earlier theories discussed and is the basis, therefore, for our categorization of uncertainty-bearing as a fourth main entrepreneurial function. In discussing the entrepreneur as uncertainty-bearer, there is no one theory representative of the different roles the entrepreneur may play in an environment characterized by uncertainty. Therefore we make a further division and analyze in turn the entrepreneur as speculator (Cantillon), product owner (Hawley), and decision-maker (Knight).

The organization of this section is made simpler because a full review of each author's economic theory is not needed. Cantillon's production theory is unimportant for our purposes; Hawley and Knight are neoclassical marginalists, roughly subscribing to Schumpeter's equilibrium view (the circular flow). Thus there is no need to review their overall theories of production and distribution. Each section will simply be divided into an examination of the entrepreneur's productive function and his remuneration.

The entrepreneur as speculator

Richard Cantillon, a pre-Physiocratic French economist, focused on the entrepreneur's role in a free market system. The entrepreneur (or 'undertaker" in Henry Higgs' 1931 translation of the *Essai sur la Nature du Commerce en General*, Cantillon's only surviving work) conducts all of the exchanges in the market, buying from producers and selling to consumers. By performing this function, he leads the market toward equilibrium. But he is more than a mere arbitrageur (buying low and selling high) because of the presence of uncertainty. The entrepreneur, in conducting his transactions, buys at a certain price and sells at an uncertain one. He is a speculator.

Cantillon's entrepreneur as speculator is the key to the market system because of his willingness to bear risk. Risk is inherent in competition and its dangers are clear: 'every day one sees some of them [entrepreneurs] become bankrupt.'[70] Though many fail, those who survive drive the market toward equilibrium. Entrepreneurs respond to profit opportunities, bringing together the quantities demanded and supplied. If profits are made, there is entry; losses lead to exit. Without the entrepreneurial element, no exchanges would take place.

Cantillon's income distribution theory is very simple: the entrepreneur receives any and all profit (the excess of realized selling price over the certain cost). Cantillon uses a risk theory of profit as a means to identify entrepreneurship. Any agent, laborer, landlord, or capitalist who receives an uncertain income is an entrepreneur. The farmer, for example, who pays a fixed sum for the productive factors (land, labor, and raw materials) in return for an uncertain profit, is an entrepreneur. 'The price of the Farmer's produce depends naturally upon these unforeseen circumstances ["the weather . . . the demand . . . the number of births and deaths"], and consequently he conducts the enterprise of his farm at an uncertainty.'[71] Similarly the 'Carrier', who buys the farmer's produce and transports it to the city, is an entrepreneur by virtue of his uncertain return.

> [The Carriers] bind themselves to pay the Farmer a fixed price for his produce, that of the market price of the day, to get in the City an uncertain price which should however defray the cost of carriage and leave them a profit. But the daily variation in the price of produce in the City, though not considerable, makes their profit uncertain.[72]

Cantillon, tracing the various exchanges that are made as the product reaches the consumer, repeatedly points out the distinguishing feature of entrepreneurship, the uncertain return. Wholesalers buy from carriers at a certain price and sell to retailers at an uncertain price. Retailers buy from wholesalers at a certain price and sell to consumers at an uncertain price. Farmers, carriers, wholesalers, and retailers are all entrepreneurs.

Cantillon, in fact, extends his definition to cover some unlikely 'entrepreneurs'. Anyone earning an uncertain income is an entrepreneur, 'whether they set up with a capital to conduct their enterprise, or are Undertakers of their own labour without capital . . . the Beggars even and the Robbers are Undertakers of this class.'[73]

Anyone who receives a fixed income cannot be, by definition, an entrepreneur; they are 'hired people'. Cantillon warns that the absolute magnitude of the fixed wage is irrelevant: 'The General who has his pay, the Courtier his pension and the Domestic servant who has wages all fall into this last class [hired people].'[74]

Cantillon's entrepreneur is a crucial part of the market system, buying at a fixed price and selling at an uncertain one. The willingness to do this allows exchange to take place. Furthermore, the responsiveness to profit opportunities drives the market toward equilibrium. Cantillon's distribution theory focuses entirely on the type of income earned. Receipt of an uncertain return is the identifying feature of the entrepreneur.

By the middle of the eighteenth century, Richard Cantillon had presented the first theory of entrepreneurship, casting the entrepreneur as a speculator in an uncertain environment. Cantillon's focus on uncertainty was not to be a unique view of the entrepreneurial role and his influence on future economists can be seen clearly, for example, in the work of Jean-Baptiste Say.

The entrepreneur as owner

Frederick Barnard Hawley, a prominent American economist, published several articles on entrepreneurship in the *Quarterly Journal of Economics* during the early 1900s. His main ideas on the topic are contained in *Enterprise and the Productive Process* (written in 1907).

Hawley accepted the orthodox production theory (land, labor, and capital as the three great agencies of production), but argued that a particularly crucial element, enterprise, was missing. Hawley accepted labor as the physical or mental efforts provided by man; capital as abstinence or waiting; and land as natural agents provided by nature. He added the function of enterprise as 'the assumption of responsibility in industrial undertakings'.[75]

Hawley then makes a fundamental division: the three orthodox factors are classified as 'means of production'; enterprise is the 'cause or purpose' of production.[76] In a very real sense, Hawley superimposed a dominant element, enterprise, over the orthodox theory of production. Enterprise is not a productive factor or means, but rather a motivational force.

Hawley's basis for distinguishing between land, labor, and capital, on the one hand, and enterprise, on the other, lies in the hierarchical nature of the productive process. The key is that the landowner, laborer, and capitalist look to the enterpriser for direction. The enterpriser commences the productive process:

'Enterprise is the source of all economic activity, as well as of all individualistic and social activities.'[77]

But the adoption of the entrepreneurial role carries with it a cost – the assumption of responsibility. In an uncertain environment, the enterpriser motivates production and becomes the responsible owner of the product. By his ownership, he assumes the responsibility of the use and employment of the means of production and the sale of the product.

The enterpriser who first creates the product is the only true productive agent; land, labor, and capital are means to an end designated by the enterpriser: 'Just as it is the man who pays for having it dug who digs the ditch, and not the owner of the land or of the spade or of the muscular force employed.'[78]

Hawley emphasizes repeatedly that coordination is not the key element in the enterpriser's function. He criticizes the perceived orthodoxy for casting the entrepreneur as a coordinator and placing him on equal footing with the other means of production Hawley argues that the enterpriser

> is only a co-ordinator in the sense that he directs co-ordination for his own benefit, or rather is co-ordinated for. He is the principal, they [land, labor, and capital] are the agents. Co-ordinations . . . are only the means by which he attains his end, which is to subject himself to the benefits of ownership with its attendant responsibilities.[79]

Hawley's conception of the enterpriser is an attempt to find the seat of power in the productive process. Productive factors are mere tools; enterprise is the head – figuratively and functionally – of the productive process.

> Subject to the limitation that he must produce what consumers will pay him for at a remunerative rate, the enterpriser is the sole arbiter as to the method and direction of production. The landlord, as such, has nothing at all to say about the crops that the renting farmer will raise; or the capitalist, as such, about how his capital shall be invested; or the laborer, as such, about what he shall work at. The direction of production – what shall be produced, how much of it, and by what methods – lies wholly with the enterpriser, who will allow the landlords, capitalists, and the labourers only what prevailing conditions enforce.[80]

Thus Hawley's enterpriser has a key function in the productive process: using the means of production at his disposal, he decides what to do. His power is derived from his ownership rights. He owns (or if he rents, he assumes responsibility for) the means of production. Any product created is therefore property of the enterpriser. By virtue of his ownership rights, he can dispose and direct the means under his control or the final product as he sees fit. However, the enterpriser operates in a world of uncertainty. If the product is destroyed, if an improved good steals his customers, or any of a variety of unforeseen events ruin the enterprise, it is the enterpriser as responsible owner who bears the burden.

Hawley's distribution theory grants wages to labor, interest to capital, and rent to land according to supply and demand considerations. The enterpriser is the distributive agent, paying the means of production their fixed returns. As for the enterpriser himself, he is the claimant of profits – the uncertain residual income. Profits are a return to ownership, a return for bearing the attendant risks and responsibilities. Profit 'is the distinct result, incentive to, and reward of the involved assumption of responsibility'.[81]

The role of profit is the usual one of incentive and signal: 'Profit is the sole inducement to every volitional human thought or action.'[82] Large profits will induce entry; losses lead to exit. In discussing his theory of distribution, Hawley stresses again the difference between enterprise and coordination, arguing that profit is not a return for the function of coordination. Profit can only be gained by the one who has production take place for his benefit by he who bears the responsibility of the results. 'It is only when the co-ordinator subjects himself to the result of his own coordination, or of the co-ordination of others, that he becomes the recipient of profits.'[83]

Hawley casts the entrepreneur as a motivational and uncertainty-bearing element, not a factor of production. The factors, or means, of production are guided by the enterpriser. This is no to say the crucial role is coordination, for a mere coordinator can be hired and paid a fixed wage. The enterpriser is a guide in the sense of choosing what product will be produced; he holds the seat of power in the productive process. The entrepreneur's power is derived from his willingness to be the ultimately responsible agent in the productive process. The means of production are guaranteed their fixed returns; the enterpriser receives an uncertain residual. Hawley's risk theory of profit highlights his conception of the entrepreneur as responsible owner. In a nutshell, the enterpriser makes the grand decisions, answers to no one (except indirectly, to the consumers) and bears the gain or loss of his endeavors. Once again, yet for another different reason, the entrepreneur is the key to the productive process.

The entrepreneur as decision-maker

Frank H. Knight focused on the responsible decision-making function in an uncertain environment. Although a prolific writer throughout his career, the fundamentals of his theory of entrepreneurship can be found in his doctoral dissertation, published in 1921, *Risk, Uncertainty and Profit*.

Knight followed Schumpeter's exposition, first describing the world in its ideal state of general equilibrium. Then, with the introduction of uncertainty, the entrepreneur's function becomes the principle element in production and distribution.

For Knight, the crucial 'heroic' assumption of orthodox production theory lies in 'the assumption of practical omniscience on the part of every member of the competitive system'.[84] This assumption of perfect knowledge or perfect information reduces the productive process to a mechanical model. Land (natural agents), labor (worker and 'mere manager') and capital (advances to the factors during the period of production) combine to make a product. The price system is the grand allocator of resources to their most productive uses and arbiter of which products are produced. In fact, the price system answers all the questions an economic system must confront: how, what, where, and when products are produced and distributed.

The productive factors are on an equal footing; management plays no special role. Managers are undoubtedly necessary to coordinate resources, 'but under conditions of perfect knowledge and certainty such functionaries would be laborers merely, performing a purely routine function, without responsibility of any sort, on a level with men engaged in mechanical operations'.[85]

It is important to note that in such an ideal state, pure profit is nonexistent. Each factor, including management, will receive a fixed return based on its respective value of the marginal product. Any deviation from the exact equality of revenues and costs (the sum of the factor payments) leads to instantaneous adjustment.

Knight then introduces the crucial element of uncertainty. He carefully distinguishes, however, between risk and uncertainty. Risk is defined as a random event with a known distribution. Uncertainty is randomness in which the distribution of probabilities is *completely* unknown. This distinction is the basis of a critique against previous risk theories of profit (including Hawley's). Randomness per se is not critical. If the chances of an event occurring are known, they can be accounted for (for example, through insurance) and the system will function exactly as before. Managers will routinely calculate expected values and receive fixed returns; pure profit will remain nonexistent.

Uncertainty, however, tremendously changes the workings of the system. There is no basis on which to proceed, yet proceed we do. Someone must take the responsibility of decision-making in such an environment. A new productive agent arises – the entrepreneur. Uncertainty forces decisions to be made under ignorance: actions are based on opinion rather than knowledge. 'With uncertainty present, doing things, the actual execution of activity, becomes in a real sense a secondary part of life; the primary problem or function is deciding what to do and how to do it.'[86] Thus the entrepreneur usurps one of the functions of the price system by determining what products are produced. It is the functional role of the entrepreneur to forecast consumers' wants and direct production toward those perceived wants. It is the presence of uncertainty that implies a role for responsible decision-making. The decisions taken and actions carried out are not guaranteed success; the possibility of gain is accompanied by a more probable chance of loss.

At its most fundamental level, Knight's entrepreneurial theory is simply based on the realization that someone must decide what to do and be responsible for that decision. The crucial nature of this function lies in the fact that the entrepreneur never really knows in advance if his plans and expectations are correct.

The entrepreneur performs his responsible decision-making function by forecasting demand and estimating the factors' marginal productivities. On the basis of their anticipated value of the marginal product, the entrepreneur pays the factors a contractual wage. Production proceeds and the product is distributed. Any divergence between the actual and anticipated value of the marginal product is borne by the entrepreneur. Thus the entrepreneur bears uncertainty, taking the chances and simultaneously shielding those who are unwilling to gamble from the effect of an uncertain environment. Any decision taken involving responsibility for possible error is an entrepreneurial decision.

Knight extends his entrepreneurial theory, discussing how one becomes an entrepreneur, the entrepreneur in the corporation, and the like. Unfortunately, a detailed examination of these issues is beyond the scope of this work. An important point, however, which will further emphasize the entrepreneur's functional role, is Knight's discussion of delegation in the modern corporation. The true entrepreneur is the one who, even if he did not make a particular decision, is responsible for the decision.

> The responsible decision is not the concrete ordering of policy, but ordering an orderer as a 'laborer' to order it. And this final responsibility necessarily takes the consequences of its decisions . . . the crucial decision is the selection of men to make decisions.[87]

Thus Knight's entrepreneur is more than a manager or actual productive service. He keys the productive process by deciding, in an uncertain environment, what and how to produce. He is entrepreneur by virtue of his willingness to accept the results of a particular endeavor.

Knight's theory of distribution revolves around his uncertainty theory of profits. The productive services hired by the entrepreneur receive an imputed contractual return based on their anticipated value of the marginal product. The entrepreneur as responsible decision-maker receives the 'pure profit' – the residual difference between realized revenues and estimated (paid) costs. Clearly, uncertainty is a necessary condition for the existence of pure profits.

The entrepreneur receives pure profit as a return for responsible decision-making and insuring factor owners a certain income. Pure profits, however, are not an imputed return.[88] Like Kirzner and Schumpeter, Knight denies any relationship between pure profit and entrepreneurial services. The magnitude of pure profits is determined by the competition of rival entrepreneurs and non-entrepreneurs. Pure profits are high if the entrepreneur is not forced to pay as much as he could for the factor services. For Knight, profits act as a signal, not only in influencing entry and exit, but also in showing the factors they can get a greater return. Thus Knightian pure profits are squeezed from several directions.

Knight's theory of entrepreneurship focuses on the entrepreneur's role in an uncertain environment. The presence of uncertainty requires an agent to bear the burden of incorrect decisions. The entrepreneur is called upon to forecast consumers' wants and be responsible for the results of his decisions. Knight's distribution theory simply gives the entrepreneur a residual, pure profit for his function. Pure profit is not based on typical productivity considerations; it is an unimputable return. It is necessary, however, as the incentive which induces the entrepreneur to make decisions and take chances.

To summarize, the three theorists discussed in this section made uncertainty the key element in their entrepreneurial theories. Cantillon has the entrepreneur buying at a certain price and selling at an unknown price. Hawley's entrepreneur takes responsibility by virtue of his ownership rights. The Knightian entrepreneur makes decisions for which he is ultimately responsible. The common characteristic in these fundamental roles is the bearing of uncertainty. Without the entrepreneur, production could not take place in an uncertain environment. Uncertainty paralyzes the productive process. The entrepreneur counters uncertainty, allowing production and distribution to operate. The functional role is very much that of a buffer, shielding the economy from uncertainty.

It is interesting to note that none of these authors who emphasized uncertainty cast the entrepreneur as a fourth productive factor (Hawley, in particular, was adamant on this point). For Cantillon, the entrepreneur's uncertainty-bearing allows exchange to occur; he is a necessary distributive agent. The uncertainty borne by Hawley's entrepreneur provides the motivational or purposive drive behind production; he is a necessary causal force. Knight's entrepreneur is an agent willing to be responsible for a decision that requires judgment. Because of the presence of uncertainty, the price system is no longer the perfect sounding board of consumers' wants. The Knightian entrepreneur assumes the role of chooser of products and methods; he is a necessary decision-making agent.

Profit is the reward for exercising the entrepreneurial function. In an uncertain environment, expected and realized results are bound to diverge; perfect coordination is an impossibility. At the junction of an imperfect fit is a profit or loss. The entrepreneur is responsible for these discrepancies, realizing gains and bearing losses. Importantly, it is the anticipation of profit, not its magnitude, that provides the needed incentive.

In an uncertain environment, the entrepreneur comes to the fore by making production, exchange, and distribution possible. The entrepreneur, in a world characterized by uncertainty, is the fundamental agent in the economic system.

Conclusion

This chapter provides a review of the main entrepreneurial roles in the history of economic thought. By focusing on particular entrepreneurial functions, we can categorize diverse theories of entrepreneurship by functional role. Fundamentally, there are four entrepreneurial functions: coordination, arbitrage, innovation, and uncertainty-bearing.

Jean-Baptiste Say presented the role of entrepreneur as coordinator. As the crucial factor in human industry, the entrepreneur hired and combined the other productive agents. The entrepreneur plays a critical role as an actual factor of production. Israel Kirzner represents the Austrian view of the entrepreneur as arbitrageur. The entrepreneur, charged by 'human action', drives the market process. His role is that of an equilibrating mechanism, noticing profit opportunities and moving to fill the gap. Joseph Schumpeter developed a theory of economic development and business cycles based on the entrepreneur as innovator. By breaking new ground, creating 'new combinations', the entrepreneur shattered the circular flow and forced progress. Finally, the entrepreneur as uncertainty-bearer was seen by several theorists as the agent who conquered uncertainty, allowing the productive process to continue. Richard Cantillon's entrepreneur as speculator undertook the risk of an uncertain selling price, allowing exchange to take place. Frederick Hawley's entrepreneur as responsible owner bore the risks of ownership, giving him the power to direct production. Frank Knight's entrepreneur as responsible decision-maker was accountable for the results of a decision liable to error, allowing such decisions to be made.

A tome could be written on the connections and contradictions between these theories. Superficial observation shows the link between Say's entrepreneur in 'commercial industry' and Cantillon's speculator. And what of the role of uncertainty? Hawley focuses on ownership and Knight on decision-making, but the underlying key element, uncertainty, is the same. Cantillon's speculator is clearly Kirzner's arbitrageur in an uncertain environment. On the other hand, Kirzner's entrepreneur equilibrates, while Schumpeter's, seemingly, does the exact opposite. Is a Schumpeterian imitator a Kirznerian entrepreneur? Say's entrepreneur is a fourth factor of production; Hawley rails against such a definition, arguing that the entrepreneur is a motivational force and should never be cast as another factor of production.

These issues are even more interesting when we consider the development of these theories. For example, Schumpeter certainly read Say's *Treatise*. The impact on the Schumpeterian theory is clear: it is only a small jump from entrepreneur as combiner to entrepreneur as creator of new combinations.

For us, however, the most important point lies in the fundamental characteristic shared by all entrepreneurial theories – the central position granted to the entrepreneurial function. For all of these theorists, for a wide variety of reasons, the disappearance of the entrepreneur would bring the market system to a halt. For some, the prime motivational or causal element in production would be lost. Others would have the distributive process unable to function. Still others would see no possible way for growth and development to take place.

This chapter categorizes the various functional roles the entrepreneur has played in the history of economic thought. But, more importantly, it attempts to convey the fundamental and indispensable nature of these roles. From a wide variety of viewpoints, spanning place and time, the entrepreneur has been investigated as the key to our understanding of the market system.

Notes

1 The little research into the history of entrepreneurship that has been done proceeds along these lines. See, for example, J. A. Schumpeter, *History of Economic Analysis*, (London: George Allen & Unwin, 1954) and R. Hebert and A. Link, *The Entrepreneur: Mainstream Views and Radical Critiques*, (New York: Praeger, 1982).

2 The *Traite d'économie politique* first appeared in 1803; four editions, heavily revised, followed. The fourth edition (1819) was translated into English by C. R. Prinsep in 1821.

3 Hebert and Link, *The Entrepreneur*, p. 40.

4 Schumpeter, *History of Economic Analysis*, p. 645.

5 G. Koolman, 'Say's conception of the role of the entrepreneur', *Economica*, New Series 38 (1971); 282–86.

6 Jean-Baptiste Say, *A Catechism in Political Economy*, trans. by John Richter (New York: Augustus M. Kelley, 1967; originally published 1821), p. 26.

7 Jean-Baptiste Say, *A Treatise on Political Economy*, 4th edn, trans. by C. R. Prinsep (Philadelphia: John Grigg, 1830; originally published 1803), p. 14.

8 Say, *Catechism*, pp. 8–10.

9 Say, *Treatise*, p. 20.

10 Say, *Treatise*, p. 21.

11 Say, *Treatise*, p. 268.

12 Say, *Treatise*, p. 279.

13 Say, *Treatise*, p. 23.

14 Say, *Treatise*, p. 285.

15 Say, *Treatise*, p. 22.

16 Say, *Treatise*, p. 285.

17 Say, *Treatise*, p. 286.

18 Say, *Treatise*, p. 287.

19 Say, *Treatise*, p. 278.

20 Say, *Treatise*, p. 285.

21 Say, *Treatise*, p. 285.

22 Say, *Treatise*, p. 285.

23 Say, *Treatise*, p. 286.

24 Say, *Catechism*, pp. 28–9.

25 Koolman, 'Say's conception of the role of the entrepreneur', p. 276.

26 See Israel M. Kirzner (ed.), *Method, Process and Austrian Economics* (Lexington, Mass.: Lexington Books, 1982), pp. 139–59 for Kirzner's view of the relevant issues; Herbert and Link, *The Entrepreneur*, pp. 95–100 for the critics' side.

27 See, for example, Ludwig Lachmann, *Capital, Expectations, and the Market Process*, Walter E. Grinder ed. (Kansas City: Sheed Andrews and McMeel, 1977), especially, 'Some notes on economic thought, 1933–1953', p. 133–48.

28 Israel M. Kirzner, *Competition and Entrepreneurship* (Chicago: University of Chicago Press, 1973), p. 5.

29 This is the Walrasian version of the equilibrating process. Marshallian equilibration is different in that quantity is the adjusting variable, but the analysis is essentially the same.

30 Kirzner, *Competition and Entrepreneurship*, p. 6.

31 Kirzner, *Competition and Entrepreneurship*, p. 10.

32 Lionel Robbins, *An Essay on the Nature of Significance of Economic Science* (London: Macmillan, 1962; originally published 1932), p. 1–23.

33 Israel M. Kirzner, *Perception, Opportunity and Profit* (Chicago: University of Chicago Press, 1979), p. 7.

34 Kirzner, *Perception*, p. 12.

35 Kirzner, *Competition and Entrepreneurship*, p. 16.

36 Kirzner, *Competition and Entrepreneurship*, p. 41.

37 Kirzner, *Perception*, pp. 8–9.

38 Kirzner, *Competition and Entrepreneurship*, p. 48.

39 Kirzner, *Competition and Entrepreneurship*, p. 48.

40 Israel M. Kirzner, 'The primacy of entrepreneurial discovery,' in *The Prime Mover of Progress: The Entrepreneur in Capitalism and Socialism* (London: Institute of Economic Affairs, 1980), p. 10.

41 Kirzner, *Competition and Entrepreneurship*, p. 51.

42 Kirzner, *Perception*, p. 11.

43 Erich Schneider, *Joseph A. Schumpeter*, trans. by W. E. Kuhn, (Lincoln, Neb.: Bureau of Business Research, 1975; originally published 1970), p. 17.

44 Joseph A. Schumpeter, *The Theory of Economic Development* (Cambridge, Mass.: Harvard University Press, 1934; originally published 1911), p. 16.

45 Schumpeter, *Economic Development*, p. 16.

46 Schumpeter, *Economic Development*, p. 17 (footnote omitted).

47 Schumpeter, *Economic Development*, p. 20.

48 Schumpeter, *Economic Development*, p. 20.

49 Schumpeter, *Economic Development*, p. 21.

50 Schumpeter, *Economic Development*, p. 43.

51 Schumpeter, *Economic Development*, p. 44.

52 Schumpeter, *Economic Development*, p. 45.

53 Schumpeter, *Economic Development*, p. 64.

54 Schumpeter, *Economic Development*, p. 66.

55 Schneider, *Joseph A. Schumpeter*, p. 15.

56 Schumpeter, *Economic Development*, p. 106.
57 Schumpeter, *Economic Development*, p. 77.
58 Schumpeter, *Economic Development*, p. 85.
59 Schumpeter, *Economic Development*, p. 86.
60 Schumpeter, *Economic Development*, p. 86.
61 Niccolo Machiavelli, *The Prince* (New York: The New American Library, 1980; originally published 1537), pp. 49–50.
62 Schumpeter, *Economic Development*, p. 93.
63 Schumpeter, *Economic Development*, p. 75.
64 It is true, however, that Schumpeter later argues that class considerations are important. See Joseph A. Schumpeter, *Capitalism, Socialism and Democracy* (New York: Harper and Brothers Publishers, 1942).
65 Schumpeter, *Economic Development*, p. 128.
66 Joseph A. Schumpeter, *Business Cycles*, vol. 1 (New York: McGraw Hill, 1939), p. 105 (footnote omitted).
67 Schumpeter, *Business Cycles*, p. 132.
68 Schumpeter, *Economic Development*, p. 152.
69 Schumpeter, *Economic Development*, p. 153.
70 Richard Cantillon, *Essai sur la Nature du Commerce en General*, ed. and trans. by Henry Higgs (London: Macmillan and Co. Ltd., 1931; originally published 1730–4), p. 51.
71 Cantillon, *Essai*, p. 49.
72 Cantillon, *Essai*, p. 49.
73 Cantillon, *Essai*, p. 55.
74 Cantillon, *Essai*, p. 55.
75 Frederick B. Hawley, *Enterprise and the Productive Process* (New York: G. P. Putnam's Sons, 1907), p. 11.
76 Hawley, *Enterprise*, p. 307.
77 Hawley, *Enterprise*, p. 94.
78 Hawley, *Enterprise*, p. 307.
79 Hawley, *Enterprise*, pp. 331–2.
80 Hawley, *Enterprise*, p. 126.
81 Hawley, *Enterprise*, pp. 306–7.
82 Hawley, *Enterprise*, p. 307.
83 Hawley, *Enterprise*, p. 13.
84 Frank H. Knight, *Risk, Uncertainty and Profit* (New York: Houghton Mifflin Company, 1921), p. 197.
85 Knight, *Risk, Uncertainty and Profit*, p. 268.
86 Knight, *Risk, Uncertainty and Profit*, p. 268.
87 Knight, *Risk, Uncertainty and Profit*, p. 297.
88 Knight, *Risk, Uncertainty and Profit*, p. 308.

Chapter two

The disappearance of the entrepreneur from microeconomic theory – a history

Introduction

In this chapter, we review entrepreneurial investigations throughout the history of economic thought. We find that economic theory is, initially, rich in entrepreneurial debate. Economists discuss the merits and drawbacks of entrepreneurship in the various roles outlined in the previous chapter. Even after marginalism and equilibrium concepts are widely accepted, microeconomists continue to discuss the entrepreneur. In the late 1930s, however, the entrepreneur disappears from the mainstream; he is no longer a fundamental element in the standard microeconomic explanatory scheme. In the *History of Economic Analysis*, Schumpeter briefly mentions the decline of the entrepreneur in conventional economic thought. He notes that the discussion of enterprise reached a peak, producing 'some of its best performances in the 1920s, and finally petered out so far as its theoretical component is concerned'.[1] But the analysis of entrepreneurial issues did far more than just 'peter out'; it actually regressed.

Our goal, in this chapter, is to trace this changing view of entrepreneurship from a much discussed and debated issue to a totally neglected one; we must explicitly trace the rise and fall of the entrepreneur in the history of microeconomic thought. We can then begin to answer the fundamental question: Why did the entrepreneur disappear?

In analyzing different entrepreneurial theories, we will apply the framework of organization developed in the second chapter. Most of the ideas on entrepreneurship are simply a combination of the basic entrepreneurial roles (coordination, arbitrage, innovation, and uncertainty-bearing). And much of the disagreement found in the literature has its root causes in differing emphases of the basic entrepreneurial roles.

Once again, the objective is not a ranking of theories or

Introduction to
The Entrepreneur

John Kao (1991) Jo

The entrepreneur is central to this textbook and the course it embodies, for without the key individual who makes things happen, there can be no creative or entrepreneurial result. Timmons writes that "the eventual success of a new venture will depend a great deal upon the psychological make-up and determination of the lead entrepreneur. Venture capitalists have learned from experience that there is something (about) a (successful entrepreneur) that is different."[1]

In this book, traditional concepts of entrepreneurship will be assessed, and current mythologies discarded whenever possible. It may well be that no ONE, all-encompassing entrepreneurial profile exists; rather, a range of entrepreneurial types and behaviors may emerge through discussion. The book therefore introduces a variety of entrepreneurs with whom students may compare and measure themselves. Although different, these people share certain basic characteristics, understanding of which is facilitated by case discussion. The book also encourages a comparison of the entrepreneurial and managerial roles and explores the themes of personal and interpersonal creativity.

In stressing a management perspective, the objective of the material is to increase one's ability to manage one's self and others. Students will better recognize the entrepreneurial potential in themselves and others as well as become more adept at fitting themselves with particular organizational environments and challenges. The goal of this book is to create a framework for understanding and to generate personal flexibility through the ability to use skills appropriate to different situations, people, and environmental demands. In this note the following topics are discussed:

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[1] Jeffrey Timmons, *New Venture Creation* (Homewood, Ill.: Richard D. Irwin, 1985).

1. Entrepreneurship—What Is It?
2. The Entrepreneurial Environment
3. The Entrepreneurial Task
4. The Entrepreneurial Personality
5. The Entrepreneurial Career

ENTREPRENEURSHIP—WHAT IS IT?

Entrepreneurship is elusive, difficult to define. The word itself is derived from a French root meaning "to undertake." Peter Kilby in his writings on entrepreneurship has compared it to the heffalump of Winnie the Pooh fame.[2] The heffalump is a large, self-important creature whom many claim to have seen though none can identify his characteristics with certainty. Similarly, there seem to be as many definitions of entrepreneurship as there are pundits or practitioners of the art. Entrepreneurship has been defined as "adventurism," "adrenaline-addiction," "risk-taking," and "thrill-seeking." While colorful, such definitions frequently reflect personal assumptions and are often contradictory.

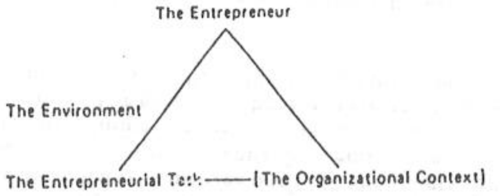
How can we begin to define entrepreneur in a more satisfying manner? Certainly they are catalysts. They make things happen. They use creativity to conceive new things and zeal to implement them. Thus, the entrepreneur is both a creator and an innovator. He or she both generates the new idea and serves as the human vehicle by which implementation of that idea occurs. He or she takes the ball and runs with it, overcoming obstacles in the way.

At a recent research conference on entrepreneurship, the following definition was adopted:

> Entrepreneurship is the attempt to create value through recognition of business opportunity, the management of risk-taking appropriate to the opportunity, and through the communicative and management skills to mobilize human, financial, and material resources necessary to bring a project to fruition.[3]

The challenge of defining entrepreneurship is compounded by several factors. First, our understanding of entrepreneurship is often personal: Like creativity or love, we all have an opinion about it. Second, "entrepreneurship" is increasingly synonymous with "good." To the extent that entrepreneurs are viewed as the new cultural heroes, critical examination of their characteristics can be obscured by media hype or collective beliefs. Third, while "entrepreneur" has some tangibility because it refers to a person, "entrepreneurship" is more difficult to define because it is an abstraction. Fourth, our definitional challenge is also intensified by the current paucity of well-designed and controlled research studies to date on the entrepreneur. Finally, definition is difficult when it is assumed that entrepreneurship is something opposed to or divorced from management—that the entrepreneur and the manager are two different species of business person. Understanding the commonalities as well as differences in the entrepreneurial and managerial roles is central to our discussion.

FIGURE 1-1



In this book, the framework of interrelating person, task, and organizational context will be adopted in considering entrepreneurship. See Figure 1-1.

Collective values and available infrastructure which make up the entrepreneurial environment exert a powerful influence on the character of entrepreneurship: They either support or inhibit its emergence. The environmental challenges confronting the entrepreneur differ greatly in the United States, Japan, or Sweden, for example. Attitudes towards self-employment, wealth, and risk, and the availability of investment capital are only some of the relevant factors.

The first leg of our conceptual tripod relates to the tasks which face the entrepreneur. What does the entrepreneur do? What is his or her role in the organization? What business should he or she be in? What technology should be developed? What resources marshalled? Let us say that the business is to be convenience foods. What kind of company should be founded? What organization should be developed? How should the service be rolled out? What type of information is required to support decision making? What kind of people are needed? What marketing strategy should be adopted? Answering these and scores of other questions define the task of the entrepreneur.

The second leg involves the person, and his or her motives, style, and skill. Motives are those personal factors driving the individual towards a particular goal. They make up the factors "under the hood" that create motion. They are the source of "entrepreneurial zeal."[4] Style refers to social interaction, the inter-

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[2] Peter Kilby, "Hunting the Heffalump," in *Entrepreneurship and Economic Development*, ed. Peter Kilby, (New York: The Free Press, 1971).

[3] John Kao and Howard Stevenson, eds., *Entrepreneurship: What It Is and How to Teach It*, Division of Research, Harvard Business School, 1984.

[4] A favorite term of noted venture capitalist Pitch Johnson, founder of Asset Management Corporation.

FIGURE 1-2 KEY ISSUES

Person	Understanding his/her personality and skills
Task	Defining a vision Marshalling resources Providing leadership
Organizational Context	Created depending on who the entrepreneur is, what the task is, and what leverage is required
Environment	Exploiting the availability of environmental resources, including: Capital People Infrastructure

face between self and others. It determines how one is perceived. It is an important means by which the entrepreneur achieves his or her goals through others. Finally, the variety of skills employed range from intuition to analytical ability. Individuals must also be considered in terms of their developmental history. Many of the cases in this book describe a personal story that gave significant shape to the individual entrepreneurial career. In short, it is important not simply to make do with a one-dimensional view of the entrepreneur: We need to keep many factors and perspectives in mind. Finally, our conceptual model includes the notion of organizational context, which is bracketed in Figure 1-1. Obviously, the entrepreneur stands alone, initially. It is his or her task to create an organizational context which fits best with personal vision and sense of purpose, with the key tasks which must be accomplished for the enterprise to succeed, and finally with the environment which has the capacity to facilitate or hinder the new enterprise. This organizational context is latent in the entrepreneur's vision and requires realization. The issues are summarized in Figure 1-2. The next three sections maintain this multidimensional perspective in expanding on the discussion of the entrepreneurial task, environment, and individual.

THE ENTREPRENEURIAL ENVIRONMENT

Entrepreneurship is environmentally determined. For example, our colloquial understanding of the term is very much a reflection of the values and traditions of the United States. When we examine the values that guided the founding of this country, when we read such classic works as Ralph Waldo Emerson's essay on self-reliance,[5] we are struck by the importance of independence, self-determination, and the rewards of initiative. This is eloquently captured by Kaplan:[6]

> Words matter. Americans believe that their country is great because it is good; . . . they believe it is good because it is entrepreneurial. And so the controversy about what entrepreneurs are is far more than a debate about how to run a business. It is about how to lead and who is to lead. It is a discussion, a discussion about what businesses always are, about what America is and what Americans are.

If entrepreneurship is "as American as apple pie," then current events conspire to expand its definition, for entrepreneurship has been undergoing global expansion, and in previously unprecedented ways.[7] For example, entrepreneurship and creativity are hot topics of discussion in Japan, whose culture is known for its emphasis on consensus and group behavior. In Japan, the Japanese executive may find it easier to overcome a need for company loyalty and security and start something independently. The case on Akira Kimishima in this book is relevant in this regard. In Europe, the past decade has witnessed the explosion of venture capital, the prominence of successful venture companies (e.g., Benetton, Virgin), a trend toward the privatization of industry, increasing media attention, changing attitudes towards independence and money. Even in the People's Republic of China, entrepreneurial activity enjoyed a fragile resurgence during the past decade.

What are the ingredients that influence an entrepreneurial environment? A number of factors are relevant, whose combination creates a "critical mass" necessary for entrepreneurial activity to flourish. Obviously, capital availability is essential. The "golden rule" applies here as well: Those with the gold make rules. Mechanisms for realizing value are also important. There is little point in making money if it cannot be accumulated and directed towards new objectives. The "harvest" for the entrepreneur may occur through, for example, sale of stock in capital public markets or private placements. If appropriate public markets for unlisted securities are absent or if tax regulations are punitive, the entrepreneur's zeal may be dampened by an inability to harvest.

Availability of other resources is also important. These include human resources with the necessary experience and skills, experts in such areas as law, information resources such as libraries and data banks, and infrastructure resources such as inexpensive space. Other factors influence the environment. Media attention is important, particularly as a means of publicizing the stories of appropriate role models and success stories. Idea-generating institutions are also important. Leading corporations such as Control Data and Hewlett-Packard have taken a role in fostering entrepreneurship through educational and investment programs. Universities are also valuable, as sources of technical opportunity and expertise. Finally, the environment is in a sense composed of the streams of opportunity available to the entrepreneur. New technological breakthroughs are likely to fuel a large amount of entrepreneurial activity.

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[5] Ralph Waldo Emerson, "On Self-Reliance," *Essays*, ed. Eugene F. Irey (New York: Garland Publishing, 1981).

[6] R. Kaplan, "Entrepreneurship Reconsidered: The Antimanagement Bias," *Harvard Business Review*, V. 65, no. 3, 1987.

[7] Sabin Russell, "Now It's the World's Turn," *Venture Magazine*, September 1984.

The environment also exerts a significant influence in dictating the choices available to the would-be entrepreneur. In many societies, for example, access to mainstream jobs in established companies is blocked or hampered for certain groups such as minorities and immigrants. Individuals from such groups will be forced by circumstance to create their own economic platform by starting their own businesses. The drive towards social assimilation will stimulate such efforts.

Finally, the cultural environment is influential. Entrepreneurship during the past decade has been different in style from its manifestations in other historical periods. The time between the creative idea and the corporate institution has been swift; in no other era have the dynamics of organizational growth been more compressed. And as if in response, a group of young people and the organizations they have founded appear inherently supportive of entrepreneurial activities that seemingly thrive on rapid, volatile change. Names like Apple, Celestial Seasonings, Lotus—these conjure up a new spirit of entrepreneurship, which I call "the corporate new wave."[8] This corporate new wave is not only responsible for creating an economically significant group of companies (and entire industries) with aggregated annual net revenues in the billions, it has been considered trend-setting by both the popular and business press. Sharing the cultural heritage of the 1960s, which has somehow informed their business values, these young founders have established organizations that embody a new corporate role and new patterns of organizational responsibility. Cases in this book, such as Janet Axelrod, illustrate this "new wave" ethos.

THE ENTREPRENEURIAL TASK

What do entrepreneurs do? Basic to the entrepreneurial role is the ability to recognize and exploit opportunities. In fact, Stevenson has defined the task of the entrepreneur as "the relentless pursuit of opportunity."[9] He sees opportunity as the recognition of a desired future state involving growth or change, and a belief that achievement of the state is possible.

As Drucker and others have pointed out, opportunity may come from many sources: the unexpected; incongruities in the relationship among industries and customers; process needs; changes in industry or market structure; changes in perception technology; government regulation; demographic shifts; and competitive pressures. Examples of factors which may create new opportunities for the entrepreneur include diplomatic relations with China (the unexpected); breakdown in the relationship between brokers and purchasers of securities (incongruities in the relationships among industries and customers); robotics (new process needs); the growing importance of home video relative to movie theaters (changes in industry or market structure); gourmet fast foods (changes in perception); genetic engineering (technology change); banking and airlines (deregulation); herbal teas and other health foods (demographic shifts); the personal computer industry (competitive pressures).

Implicit in the definition of the entrepreneur's role as the perception and pursuit of opportunity are a number of *psychological tasks*. They are captured by Schwartz's elegant description of the entrepreneur as "a dreamer who does."[10] The entrepreneur must be skillful to see opportunities where others do not. It is as though the entrepreneur has more finely tuned antennae. To the extent that an opportunity is latent in a given situation or implies a desired view of the future, the entrepreneur must use *intuition* effectively. Psychologists define intuition as the ability to find a meaningful pattern in an assortment of disparate data, to rely on knowledge derived from within. The entrepreneur often knows something with conviction when others do not, or when factual data are lacking to back up the claim. The entrepreneur will often say "Aha!" when others are still scratching their heads.

The entrepreneur must also be an implementer. This means an *ability to attend to details*, to be operationally oriented, to "take care of business." The entrepreneur must be responsive to objective knowledge derived from the environment. Thus, implicit in the entrepreneurial role is the notion of psychological balance between personal or intuitive and external or objective knowledge. Stereotyping the entrepreneur as an impractical dreamer or as a tough-minded seeker of personal advantage through the mastery of details is inaccurate.

The entrepreneur is faced with a number of *interpersonal* tasks as well. To marshall needed resources, the entrepreneur must work with many external constituencies; bankers, lawyers, public relations companies, consulting firms, government agencies are only some examples. It is part of the entrepreneur's job description that he or she must be comfortable working with a wide range of people. This *extroverted* style must be balanced by an ability to be alone to pursue *creative* tasks. It is only in the solitude of the entrepreneur's own thoughts that the creative vision about a new business possibility can be worked out completely. Thus, the extroversion of working through people must be balanced with the *introversion* of creative thought.

Unless the plan for a new enterprise will work through a sole proprietorship, the entrepreneur must work with and through people to build an organization suited to implementing the perceived opportunity. Thus, the entrepreneur must be a *leader*, able to define a vision of what is possible and to attract people to rally around that vision and transform it into a reality. The entrepreneur's leadership tasks are complicated by the inherent nature of the new enterprise. Typically, resources are scarce and the organization has no track record. Thus, the entrepreneur cannot attract people to the enterprise because of current financial rewards, or the stability and prestige of the organization. Rather, to paraphrase Charles Revson, the entrepreneur offers hope—hope that the vision will be realized, that future rewards will be obtained.

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[8] John Kao, "The Corporate New Wave," in *Entrepreneurship, What It Is and How to Teach It*, John Kao and Howard Stevenson eds., Division of Research, Harvard Business School, Boston, 1984.

[9] Howard Stevenson, personal communication.

[10] Robert Schwartz, personal communication.

The entrepreneur often motivates others by charisma, the ability to exert an influence on others solely because of who one is. Entrepreneurs like Steven Jobs (Apple Computers) or Fred Smith (Federal Express) are frequently described as charismatic. Charismatic authority is personal and unstable, suited to times of change; hence, entrepreneurs frequently use their charisma to get things done through people in situations where usual incentives are unavailable or difficult to apply. They embody a cause which attracts the loyalty of those people needed for the success of the new enterprise.

Thus, the entrepreneur's tasks are diverse: to see an opportunity; marshall human and other resources necessary to pursue it; and transform the opportunity into a tangible result. Their job description includes creative, operational/managerial, interpersonal, and leadership tasks.

THE ENTREPRENEURIAL PERSONALITY

Various scholarly lenses have been held up to the entrepreneurial individual. Numerous attempts have been made to identify essential characteristics of entrepreneurs, using a trait approach; other research examines the entrepreneur's personality and is based in large measure on psychoanalytic or depth psychological theory.

Entrepreneurial Traits

In a recent and comprehensive review, Timmons and his colleagues summarized characteristics on the entrepreneur distilled from 50 research studies. These traits include:

- Total commitment, determination, and perseverance
- Drive to achieve and grow
- Opportunity and goal orientation
- Taking initiative and personal responsibility
- Persistent problem solving
- Realism and a sense of humor
- Seeking and using feedback
- Internal locus of control
- Calculated risk-taking and risk-seeking
- Low need for status and power
- Integrity and reliability[11]

Several of these characteristics have been studied in greater detail. For example, many accounts of the entrepreneur portray an impulsive, gambling adventurer, intoxicated by his or her own adrenaline. Certainly, entrepreneurs frequently place themselves at risk. Liles has described these risks in terms of financial security, career opportunities, family relationships, and personal well-being.[12] Yet research also shows that the entrepreneur is more a risk manager than a risk-seeker. Brockhaus used standardized measurements of risk to study entrepreneurs and found little to distinguish risk-taking propensity of entrepreneurs from that of managers.[13] Stevenson has characterized the entrepreneur's attitude towards the risk-reward relationship as "You take the risk, I'll take the reward."[14]

McClelland's[15] work on achievement motivation also contributes to the literature on entrepreneurship. From his social psychological perspective, human beings are seen as driven by three motives: the need for achievement (accomplishing things); for affiliation (being with others); and for power (controlling others). Of these the need for achievement ("n Ach") was seen as most relevant for understanding the entrepreneur.

McClelland characterized individuals with high need for achievement as preferring to be personally responsible for solving problems, setting goals, and for reaching these goals by their own efforts, as well as strongly desiring some measure of their accomplishments. He suggested a link between a high "n Ach" and an entrepreneurial bent.

This trait approach to describing entrepreneurship evolved in response to practical needs. It was considered desirable to develop a profile of the entrepreneur to identify those who might become successful entrepreneurs. Hence, we do not know which are necessary, as opposed to sufficient, conditions for entrepreneurship nor which characteristics are uniformly associated with success.

Overall, the trait approach is far from satisfactory; many traits used to describe entrepreneurs could just as easily apply to many managers. The trait approach also lacks specificity, refers largely to men, and is not applicable in all cultures. It has also been observed by Timmons and others that certain personality characteristics of entrepreneurs, if taken to an extreme, can be a drawback to a successful enterprise in the long run (e.g., extreme self-sufficiency could prevent the founder from delegating authority and using others' help). Hence, even so-called entrepreneurial traits must be present at an optimum level for entrepreneurship to occur. A final difficulty with the trait approach is that the traits listed are usually positive, a further move towards making the terms "entrepreneur" and "good" synonymous. For example, turn around the qualities mentioned in the beginning of this section which Timmons used to define the entrepreneur. No one would want to be:

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[11] J. Timmons et al., *New Venture Creation* (Homewood, Ill.: Richard D. Irwin, Inc., 1985).

[12] P. R. Liles, *New Business Ventures and the Entrepreneur* (Homewood, Ill.: Richard D. Irwin, Inc., 1974).

[13] Robert Brockhaus, "Risk-Taking Propensity of Entrepreneurs," *Academy of Management Journal*, Vol. 23, No. 3, 1980.

[14] Howard Stevenson, personal communication.

[15] David McClelland, *The Achieving Society* (Princeton: D. Van Nostrand Company, 1961).

- Lacking commitment
- Lacking drive to achieve
- Avoiding personal responsibility
- Not oriented to problem solving
- Unrealistic and overly serious
- Avoiding feedback
- Driven by demands of others
- Not a manager of risk
- Needing status and power
- Lacking integrity and reliability

Personality Studies

Two key efforts to explore the personality of the entrepreneur come from Collins and Moore's[16] studies and Zaleznik's writings.[17,18] Each is based on a central assumption, stated in the words of Collins and Moore, that "The act of entrepreneurship is an act patterned after modes of coping with early childhood experiences."

The Collins and Moore study, published in 1964, was based on interviews and psychological testing of successful male manufacturing entrepreneurs in Michigan. The keystone characteristic of the entrepreneurs studied was a high need for autonomy, independence, and self-reliance. The implicit psychological theory underlying the study was psychoanalytic: The entrepreneur was seen as driven by unresolved conflicts around authority stemming from the early relationship with his parents. A tremendous ambivalence surrounded parental authority, which could be neither rejected nor accepted. In the entrepreneurs studied, the fathers were typically unsupportive and absent failures; the mothers were long-suffering and devoted to the son, ready to rely on him rather than the father.

For Collins and Moore, the entrepreneurs' ambivalence about authority resulted in an inability either to completely accept or reject parental norms. There was a corresponding inability either to express resistance to authority or to accept it in a mature fashion. Authority was often dealt with by avoidance or a need to escape. In practical terms this accounted for the observation that entrepreneurs frequently could not function comfortably in a bureaucratic organization unless they headed it, and that they had difficulties in relinquishing possession of authority and in forming long-lived partnerships.

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[16] Orvis Collins and David Moore, *The Enterprising Man* (East Lansing, Mich.: MSU Business Studies, 1964).

[17] Abraham Zaleznik, *Power and the Corporate Mind* (New York: Harper and Row, 1976).

[18] Abraham Zaleznik, *The Entrepreneur and the Juvenile Delinquent* (unpublished manuscript, cited with permission).

This ambivalence was also linked to the entrepreneurs' ability to function well in adversity, to accept failure and rise again, to stage successful comebacks. It was based on "anxiety over success; guilt over replacing the father." At its most extreme it constituted a real weakness: the tendency to fail repeatedly.

Collins and Moore observed that an entrepreneur's story was often linked to an early crisis or dramatic vivid event—frequently an economic crisis—a dangerous and difficult situation from which the entrepreneur could survive only by relying on himself.

The Collins and Moore entrepreneurs adhered to common American success values such as honesty, hard work, self-sacrifice, competitive spirit, winning, going it alone, determination. They displayed a lack of socially upward mobility, being more interested in their achievements than in "making it" in society. They pursued hard work and chronic fatigue—for their own sake—as a personal control mechanism, balancing striving and exhaustion. They were described as restless and dissatisfied.

The authors observed patterns in the entrepreneurs' ability to work with others. Such individuals often exhibited patriarchal or patronizing attitudes toward subordinates, and projected their own resisted vices such as sloth and rebelliousness onto others. There was a high need to dominate and a fear of being dominated. This led to difficulty in establishing or maintaining partnerships.

Collins and Moore also explored motives. The most important drive in the entrepreneurs studied was for autonomy. Money was important insofar as it ensured independence, authority, and freedom from the frustrations and dependency of poverty. But it was not considered a primary motivator. Entrepreneurs used money to achieve more—not to retire. Many of these people became entrepreneurs when their advancement in organizations or the professions was blocked.

Another psychoanalytic view of the entrepreneur comes from the work of Abraham Zaleznik and his colleague Manfred Kets de Vries. Like Collins and Moore, they see the entrepreneur as a person deeply influenced by a turbulent and disrupted childhood. Their lives are frequently suffused with themes of real or imagined poverty, deprivation, death of significant others, and loneliness. Zaleznik and Kets de Vries view the entrepreneur as motivated by "persistent feelings of dissatisfaction, rejection and powerlessness" stemming from conflicted relations with parents, typically in the form of a remote, rejecting father and a domineering mother. It is the aching psychological need for restitution, for relief of these painful conflicts, which can lead either to self-destructive and impulsive acting out or to creative and innovative efforts associated with developing a new enterprise.[19] It is perhaps for this reason that Zaleznik has remarked, "To understand the psychology of the entrepreneur it is necessary to study the juvenile delinquent.[20]

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[19] Abraham Zaleznik and Manfred Kets de Vries, "Myths and Realities of Entrepreneurship," *Power and the Corporate Mind* (New York: Houghton Mifflin Company, 1975).

[20] Abraham Zaleznik, *The Entrepreneur and the Juvenile Delinquent* (unpublished manuscript, cited with permission).

Elsewhere, Kets de Vries sees the entrepreneur as operating through a sense of "entrepreneurial theater."[21] Characteristics of this theater include a need for control, a tendency towards suspicious thinking, a need for applause and the use of various psychological defenses including projection (externalizing internal problems) and splitting (seeing the world in black and white terms).

Kets de Vries, in examining the making of the entrepreneurial personality sees six principal elements.[22]

- environmental turbulence
- struggles around issues of authority with one's parents
- a feeling of rejection
- painful feelings of anger, hostility, and guilt
- identity confusion (identification with the person causing the hurt)
- adopting the "reactive" mode to painful feelings (guilt, rebellion, impulsiveness)

These authors also deal with the issues of company succession which are often materially affected by the entrepreneur's personality. To the extent that entrepreneurs identify closely with their enterprise and depend on it as a source of self-esteem, their need for control over the enterprise may conflict with its need for the sharing of authority by a larger group. If the firm is to grow, it may come into conflict with the entrepreneur's rigid or inflexible behavior. At times, the succession of new leadership or abdication by the entrepreneur may become the only options. For this reason, Kets de Vries describes the leadership style of the entrepreneur as "self-limiting."[23]

Typologies of Entrepreneurs

Because current definitions of entrepreneurship are frequently one-dimensional, it is important to develop typologies or different categories of entrepreneurs. Timmons mentioned a few differences; for example, product-oriented businesses may require different skills from service-oriented businesses, and high-tech entrepreneurs may have different educational attainments from non-technical or service-oriented entrepreneurs.

A useful distinction may also be made between *creative* and/or *charismatic* entrepreneurs who are commercially innovative as well as entrepreneuring, and *conventional* entrepreneurs who want to own and develop their own businesses but who stick to conventional product/service ideas. Although creative people and successful entrepreneurs share certain characteristics (for example, independence and tolerance of ambiguity), not all creative people are entrepreneurs nor are all entrepreneurs creative. The key to great entrepreneurial success may involve possessing a unique constellation of traits which includes creativity and entrepreneurial drive. A corollary distinction should also be made between entrepreneurs who are keen on fast growth and expansion—like Fred Smith, the founder of Federal Express—and those who are content to remain with viable small businesses.

In general, the literature on entrepreneurship shows a need for integration and developing useful typologies of entrepreneurs. Classic motivational theories, especially the psychoanalytic, are in some ways "deficit" models. But the "drive" for creativity and freedom may reflect "higher level" human needs that have developed out of health and sufficiency, and from a positive desire for self-actualization rather than from deficiency.[24]

Entrepreneurs and Managers

The literature also reveals few systematic comparisons of the characteristics distinguishing entrepreneurs from managers, although Stevenson has contributed to our understanding of the contrast with his differentiation of the promoter and the trustee.[25] Prompters make new things happen without regard for the resources currently controlled, while trustees maintain the status quo and emphasize ownership of resources. Nonetheless, in general, "entrepreneur" and "manager" are widely and freely used, as if we all understood their "differences."[26]

Using the framework of task, environment, and person may help to resolve some of these semantic issues. In fact, one of the goals of this module lies in dispelling the myth of *the* manager and *the* entrepreneur as distinct species within the business world. It aspires, rather, to introduce the idea of a spectrum of styles and predispositions, and to eliminate artificial distinctions. People may behave in a managerial or entrepreneurial fashion depending on the lens used to examine them. They may be able to array themselves by choice on a behavioral spectrum according to the demands of the task, the characteristics of the environment, and their own personal predispositions.

In general, the entrepreneurial position involves putting one's self at risk for the sake of the venture. Entrepreneurs may jeopardize their financial security and the security of others in order to get started; they may also put marriages and friendships at risk through neglect and the prospect of business failure. The entrepreneur's central question is, "What can I do?" He or she does not live with the status quo, but works to change it in accordance with his or her personal vision and values.

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[21] Manfred Kets de Vries, "Can You Survive an Entrepreneur?" (HBS Case Services, #9-484-081, Boston, 1984).

[22] Manfred Kets de Vries, "The Entrepreneurial Personality," *Organizational Paradoxes* (London: Tavistock Publications Ltd., 1980).

[23] Ibid.

[24] Abraham Maslow, "Towards a Psychology of Being," *Self Actualization* (Princeton: D. Van Nostrand Company, 1962).

[25] Howard H. Stevenson, "A Perspective on Entrepreneurship," (HBS Case Services, Harvard Business School, #9-384-131, Boston, 1983).

[26] John Kao, "Entrepreneurs and Managers: Are They Different?" Working Paper, Division of Research, Harvard Business School, 1986.

By contrast, the manager is motivated more by externally imposed goals and rewards, is less tolerant of uncertainty or ambiguity than the entrepreneur, and less oriented towards risk. Managers have chosen the relative safety of salary and position over the uncertainty of a new venture with its potential for failure and financial loss. For the manager, the operant question is, "What should I do in this situation?" The manager accepts most existing values and can create additional ones; he or she can also make new rules and has the option to change some existing ones.

The roles of entrepreneur and manager suggest different types of personal skills. We customarily think of the entrepreneur as skilled in intuition (envisioning possibilities) and emotions (appealing to others to "join the cause"). Managers, on the other hand, are seen as preferring to use rational and detail-oriented skills. Each set of skills has its appropriate place. For example, we would not wish to rely on intuition or emotion to fly an airplane or perform brain surgery. Nor would we be empathic to the needs of others or write poetry based on rational skills alone. Different tasks require different skills.

Different environments also require different skills. A bureaucracy like the post office is less likely to tolerate innovative or unusual behavior, while loosely structured, participative organizations such as entrepreneurial start-ups tend to be allergic to rigidity, whether expressed in behavior, structure, or management systems.

Different personality profiles also lead to the use of different skills. The willingness of an individual to become involved in a given type of situation depends significantly on personal preference. Someone with an obsessional style steeped in details and logical thinking may feel anxious in the unstructured environment of the start-up. Similarly, someone comfortable with emotion and intuition could feel stifled and frustrated in a rule-governed, highly structured environment. Again, the key involves an understanding of range and fit; what skills and psychological style fits with what situation.

The roles of entrepreneur and manager clearly overlap. Entrepreneurs who start companies must use managerial skills to implement their vision. Managers must use entrepreneurial skills in order to manage change and to innovate. The issue involves the combination of managerial and entrepreneurial traits in response to a given personality, a given environment, and a given set of opportunities.

THE ENTREPRENEURIAL CAREER

Our model of task, person, and organizational context is also relevant in considering the nature of an entrepreneurial career. Clearly, if the would-be entrepreneur has no opportunities to pursue, there is no entrepreneurial task, and hence no career. The environment is a factor to the extent that it facilitates or hinders the pursuit of opportunity. Finally, personality dictates what kind of environment the would-be entrepreneur is more or less likely to feel comfortable in, and hence what type of company the entrepreneur feels comfortable working in or desires to found.

FIGURE 1-3

No Go	Go
Financial obligations	Financial resources available
Need for security	Desire for self-actualization
Family obligations	Family support
Inexperience	Relevant experience

The entrepreneurial career has several distinct phases. The decision to embark on an entrepreneurial career can be influenced by a variety of factors, some personal and some environmental. Collins and Moore commented on the motivation towards entrepreneurship as coming from "blocked opportunity." They observed that entrepreneurs often start their own businesses because they are high achievers who are blocked in terms of significant advancement in large organizations or in the professions. This suggests that social conditions support increase in entrepreneurial activity among such groups as women, minorities, and academics. Our current social values encourage (allow, necessitate) women and minorities to achieve significantly while opportunities for advancement in large organizations are narrowing. For example, many academics are crossing the boundary into entrepreneurial work when academic advancement in universities has become increasingly constricted and financially unrewarding. The emergence of the biotechnology industry, with its many professor/entrepreneurs, is an indication of this trend.

Clearly, however, entrepreneurs are not only those whose prospects for advancement have been curtailed by society. Stevenson, in his study on the self-employed, found, surprisingly, that an increasing percentage of graduates from Harvard Business School undertook entrepreneurial careers.[27] Frequently, students decide to work for established organizations to continue the learning process and gain further experience in a "tuition-free" environment. As their contacts, resources, and experience increase, they may be more able to take the leap of starting their own businesses. On the other hand, obligations to spouse, children, or employers can adversely influence the entrepreneurial decision. Financial needs are obviously important. Conversely, having a supply of "walk-away money" in the bank can provide a useful comfort level. Figure 1-3 presents a "balance sheet" approach to making the entrepreneurial career decision.

Brockhaus has discussed the role of job dissatisfaction in the decision to start a business.[28] In fact, it is well known that large companies often "put entrepreneurs into business" by blocking their path towards realizing a personal vision. Steven Jobs and Steven Wozniak initially offered their personal computer to Hewlett-Packard Corporation, which turned it down. Mitch Kapor held a short-lived position at Digital Equipment Corporation but quit because he perceived slim chances of advancement. Eventually he started Lotus Development Corporation. George Lucas turned to his own company when Universal Studios offended him by cutting a token amount of footage out of his film and asserting their "creative control" over the project. Jerry Sanders of Applied Micro Devices started his own company out of a desire to "get even." Departed executives from Baxter Travenol have been responsible for a dozen startups in the biomedical arena. To the extent that established companies fail to provide avenues for their talented individuals, they may lose valuable human resources and even create their own competition.

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[27] Howard Stevenson and Paula Duffy, "Who are the Harvard Self-Employed?" Division of Research, Harvard Business School, 1984.

[28] Robert Brockhaus, "The Effect of Job Dissatisfaction on the Decision to Start a Business," *Journal of Small Business Management*, V. 18, #1, January 1980, pp. 37–43.

THE CASES

Janet Axelrod

Janet Axelrod was the first employee to join Lotus Development Corporation, a rapidly growing software company that achieved early success with its "1-2-3" program. The case shows her role as the vice president of human resource management.

Axelrod began without any existing structure or resources in place, she had only her personal vision. Her task lay in breathing tangibility into this vision. Early experiences with activist causes may have influenced the missionary quality of her subsequent work with Lotus. She leveraged her vision by developing the company's human resource function.

This case provides a look at the nature of entrepreneurship in personal terms. The class discusses such issues as Axelrod's style of doing business (the person), the role of social concerns and values in her professional outlook (the environment), and her influence on the company's development (the task).

David Marcus Backstage

David Marcus is a well-known and highly respected investment banker whose life revolves around a never-ending succession of deals. While operating within an established organization, Marcus nevertheless exhibits many of the characteristics which one might commonly associate with the entrepreneur.

The case creates several opportunities for comparative discussion. First, in requiring the class to understand the nature of Marcus' skills, it permits contrasts with the individuals portrayed in other cases. It also provides material for a discussion of the ways entrepreneurship is practiced within established environments.

Ted Turner

Turner, one of the most visible and flamboyant of a new generation of entrepreneurs, has a unique style. It is arguably one of his greatest assets and requires further analysis. Working constantly to redefine the rules of the game, Turner rides out on a white horse to face new challenges: He loves being on the cutting edge. An Atlanta billboard shows him proclaiming, "I was cable before cable was cool." In his style and beliefs, he fits with classic American dreams and with the stereotypical view of the entrepreneur.

Turner's personal background, developmental history, and relationship to his father are presented. They stimulate a discussion revolving around the questions: What are the personal and psychological issues that shape the motivations and interpersonal style that we have identified as entrepreneurial?

Akira Kimishima

In the Japanese business environment, Akira Kimishima would be considered very entrepreneurial, yet this description might be less accurate in the West. This case examines the influence of culture (the environment) on the definition of entrepreneurial behavior as well as those aspects of entrepreneurship that are independent of culture. Also, using the lens of culture, students explore Kimishima's task (starting new ventures) and his personality (such as his personal values and relationship with his father).

Peter Ueberroth

Ueberroth is a well known figure on the American scene as Commissioner of Major League Baseball and a successful entrepreneur in the travel industry. He also led the Los Angeles Olympic Organizing Committee, perhaps the largest public-sector, volunteer-staffed startup in history.

Paul Lutwak, Deborah Goldberg, Craig Knudsen, Audrey Dickason: The Entrepreneurial Career

These four caselets reveal different facets of the decision to embark on an entrepreneurial career path. Paul Lutwak, Deborah Goldberg, Craig Knudsen, and Audrey Dickason are recently graduated MBAs, each struggling with the choice of an exciting but risky venture versus a more traditional job opportunity. The Paul Lutwak and Deborah Goldberg cases also explore the question of responsibilities to a family business. The practical and personal factors important in choosing between an entrepreneurial and an established career path are elucidated.

Crown Entertainment

This case tells the story of two young partners who establish a company devoted to the independent production of motion pictures. Randy and Jake come to the new venture with different personal skills, experiences, and industry-specific knowledge.

The case offers an opportunity to discuss why partnerships form in the first place—what the nature of the "glue" is that brings people together in new ventures. Secondly, it begs the question of what kinds of interpersonal work and discussion new partners should carry out to establish their working relationship. Finally, the case presents a specific set of issues around how the financial pie is to be divided, which raises a host of more general partnership issues.

Robert Michael Companies

This caselet presents two partners who work together in a Houston-based real estate partnership. Again, an opportunity is presented to discuss how partnerships form and what the forces are which draw people together to work in them.

Dale Chapman and Richard Neely

These two cases offer an intricately detailed portrait of the birth, growth, and decline of a partnership. Told from the first-person perspective of each partner, it offers a wealth of information about the assumptions, perceptions, and feelings which guided each partner at each stage of the relationship.

The class has an opportunity to understand the stages which guide the development of a partnership as well as some of the cardinal problems which partnerships run into. Issues of conflict resolution and the balance between professional and personal life make the discussion of these demanding cases worthwhile.

Managing Entrepreneurship at the CML Group

As part of its strategy to encourage creativity and entrepreneurship within its organization, the CML group has evolved an innovative approach to understanding creative and interpersonal styles. Using theory and practices drawn from "whole brain psychology," the company is intent on creating a culture which makes explicit the types of behavior it desires from each of its members.

The class first has a chance to understand "whole brain psychology" in light of what entrepreneurs and managers do. They can then evaluate this type of approach to organizational development, and their own preferences (and reservations) about the use of such techniques in business.

FOR FURTHER READING

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4

WHARTON REPROGRAPHICS

ENTREPRENEURSHIP

STRATEGIES AND RESOURCES

MARC J. DOLLINGER

Indiana University

AUSTEN
PRESS

IRWIN

Burr Ridge, Illinois
Boston, Massachusetts
Sydney, Australia

Chapter 3

PERSONAL RESOURCE BASES OF ENTREPRENEURSHIP

Outline

- A Psychological Approach
  - *Personality Characteristics*
  - *Inadequacy of the Trait Approach*
- A Sociological Approach
  - *Impetus for Entrepreneurship*
  - *Situational Characteristics*
  - *Women Entrepreneurs*
  - *Minority Entrepreneurs*
- Process Models
  - *Strategic Orientation*
  - *Commitment to Opportunity*
  - *Commitment of Resources*
  - *Control of Resources*
  - *Management Structure*
  - *Reward Philosophy*
- Spin-offs and Knowledge Bases
  - *Spin-off Environments*
  - *Transfer of Knowledge Assets*
- Creativity
  - *The Concept of Creativity*
  - *Types of Creative Behavior*
  - *Creativity and the Resource-based Theory*
  - *Creativity Techniques*

> Where do new businesses come from? The textbooks say that the entrepreneur, like the stork, brings them.
>
> —R. Rumelt, 1988

As the above quote indicates, the entrepreneur is the midwife to new ventures in the economy. But this observation raises many additional questions. If the entrepreneur is the source of new businesses, then what is the source of entrepreneurs? Where do they come from? What motivates them? How did they reach the point where they were ready to initiate a new venture? What are their characteristics, and, most importantly, are there any characteristics that differentiate those entrepreneurs who will be very successful from those who will have more modest achievements? The question can be put another way: Is entrepreneurship a practice, like law or medicine?[1] If it is, then potential entrepreneurs begin with books and education, move to a practicum for supervised experience, and display a willingness to work hard and learn before they are licensed to go out on their own. Or is entrepreneurship more of an art, consisting of unique vision and circumstances, basically unteachable and inarticulable but residing more or less by chance in the personal resources of certain individuals? This chapter offers evidence of each viewpoint.

First we present both psychological and sociological approaches to entrepreneurship. Then we examine two process models that attempt to capture the activities and events in the creation of a new venture. Next we look at the role of knowledge as a personal resource and how it may be used for competitive advantage. Finally, we examine creativity and its contribution to innovation and the resource base of the entrepreneur.

A PSYCHOLOGICAL APPROACH

One way researchers have explored entrepreneurship has been to study the character and personality traits of people who start new businesses. These researchers hold that something is different about the way entrepreneurs act and react and that this difference is part of their intrinsic mental programming.

Personality Characteristics

Over the past few decades, entrepreneurial research has identified a number of personality characteristics that differentiate entrepreneurs from others.[2] Among the most frequently discussed are the need for achievement, locus of control, and risk-taking propensity.

The Need for Achievement. The entrepreneurial **need for achievement**, or **n Ach**, was first identified as a personality trait by McClelland in his work on economic development.[3] People with high levels of n Ach have a strong desire to solve problems on their own, enjoy setting goals and achieving them through their own efforts, and like receiving feedback on how they are doing. They are moderate risk takers.

However, the link between n Ach and entrepreneurship has not always held up in empirical testing. Researchers who have attempted to duplicate McClelland's findings or apply them in other settings have occasionally been disappointed. For example, n Ach is a weak predictor of a person's tendency to start a business, and people specially trained to have high n Ach sometimes perform no differently from a control group that receives no training. The causal link between n Ach and small business ownership has not been proven.[4]

Locus of Control. A second trait often associated with entrepreneurship is **locus of control.**[5] In locus-of-control theory, there are two types of people: (1) **externals**, those who believe that what happens to them is a result of fate, chance, luck, or forces beyond their control; and (2) **internals**, those who believe that for the most part the future is theirs to control through their own effort. Clearly, people who undertake a new business must believe that their effort will have something to do with the business's future performance.

A logical hypothesis of this theory would be that internals are more entrepreneurial than externals. But evidence supporting this hypothesis has been inconclusive.[6] Some studies have shown that internals are overly represented in the entrepreneurial population, but others show no difference between entrepreneurs and others. In fact, it could be argued that any good manager must also possess the qualities of an internal: a person who believes that efforts affect outcomes. So, while locus of control might distinguish people who believe in astrology and those who do not, it may not differentiate potential entrepreneurs from potential managers or just plain business students.

Risk-taking Propensity. Related to the need for achievement is **risk-taking propensity**. Since the task of new venture creation is apparently fraught with risk and the financing of these ventures is often called risk capital, researchers have tried to determine whether entrepreneurs make riskier decisions than other businesspeople. That hypothesis has been tested in a number of contexts, but the work by Brockhaus has been most incisive.[7]

In Brockhaus's research, the risk-taking propensities of entrepreneurs were tested objectively using a series of decision scenarios known as the Kogan-Wallace choice dilemmas. The results obtained from the entrepreneurs were compared with those obtained from a sample of managers. The findings indicated no differences between the entrepreneurs and the managers. The conclusion was that risk-taking propensity is not a distinguishing characteristic of entrepreneurs.

Inadequacy of the Trait Approach

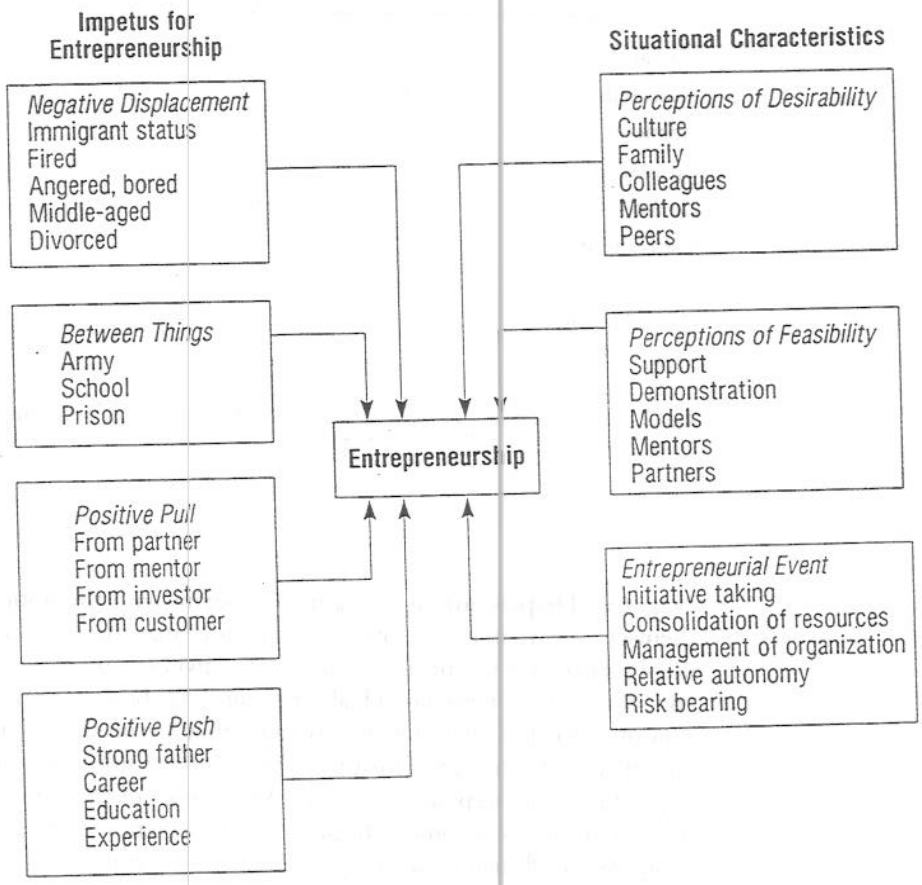
Overall, the trait approach has failed to provide either the decisive criteria for distinguishing entrepreneurs from others or a means to determine the key elements of entrepreneurship. What distinguishes entrepreneurs from nonentrepreneurs is that entrepreneurs start new businesses and others do not.[8] Many of the studies that do show a relationship between entrepreneurship and some trait "ignore the entrepreneur who is fighting for survival and [these researchers] make the term 'entrepreneur' interchangeable with 'highly successful entrepreneur.'"[9] One researcher described the search for the entrepreneurial trait this way:

> My own personal experience was that for ten years we ran a research center in entrepreneurial history, for ten years we tried to define the entrepreneur. We never succeeded. Each of us had some notion of it—what he thought was, for his purposes, a useful definition. And I don't think you're going to get farther than that.[10]

The trait approach looks for commonality and similarity among entrepreneurs. But as the resource-based theory suggests, if all entrepreneurs have a certain trait or characteristic, it is not an advantage to any of them, for it is neither rare nor imperfectly imitable. To understand entrepreneurship, we must look for circumstances that produce idiosyncratic outcomes; that is, we need a theory of differences, not similarities. For this we turn to a sociological framework that emphasizes personal history and the uniqueness of an individual's path to new venture creation.

Figure 3-1

THE SUPPLY OF ENTREPRENEURSHIP


Impetus for Entrepreneurship
Negative Displacement
Immigrant status
Fired
Angered, bored
Middle-aged
Divorced
Between Things
Army
School
Prison
Positive Pull
From partner
From mentor
From investor
From customer
Positive Push
Strong father
Career
Education
Experience
Entrepreneurship
Situational Characteristics
Perceptions of Desirability
Culture
Family
Colleagues
Mentors
Peers
Perceptions of Feasibility
Support
Demonstration
Models
Mentors
Partners
Entrepreneurial Event
Initiative taking
Consolidation of resources
Management of organization
Relative autonomy
Risk bearing

Source: Adapted from A. Shapero and L. Sokol, "The Social Dimensions of Entrepreneurship," in C. Kent, D. Sexton, and K. Vesper, eds., *Encyclopedia of Entrepreneurship* (Englewood Cliffs, NJ: Prentice Hall, 1982), pp. 72–90.

A SOCIOLOGICAL APPROACH

The sociological approach tries to explain the social conditions from which entrepreneurs emerge and the social factors that influence the decision. A sociological model is presented in Figure 3-1.[11] It depicts the decision to become an entrepreneur as a function of two factors: the impetus of momentum factors and the situational factors. The model is multiplicative: A zero on either of the causes means a failure to produce the entrepreneurial event.

Impetus for Entrepreneurship

What propels entrepreneurs forward toward self-employment? There are four factors: negative displacement, being between things, positive push, and positive pull.

Table 3-1

IMMIGRANT ENTREPRENEURS: PERCENTAGE OF IMMIGRANT GROUP MEMBERS WHO OWN A BUSINESS

National Group	*1982*	*1987*
Korean	6.8%	10.2%
Asian Indian	6.6	7.6
Japanese	5.9	6.6
Chinese	4.9	6.3
Cuban	4.1	6.3
Vietnamese	1.5	4.9
Filipino	2.6	3.3
Other Hispanic	1.4	2.3
Mexican	1.7	1.9

Source: U.S. Census Bureau and William O'Hare of the University of Louisville. Adapted from *The Wall Street Journal,* August 2, 1991.

Negative Displacement. Figure 3-1 begins with the notion that people who find themselves displaced in some negative way may become entrepreneurs. **Negative displacement** is the marginalization of individuals or groups of individuals from the core of society. These individuals or groups may be seen as "not fitting in" to the main flow of social and economic life. Because they are on the outer fringes of the economy and of society, they are sensitive to the allure of self-employment; having no one to depend on, they depend on no one. An example of this phenomenon is the tendency of immigrants to become entrepreneurs. In societies where economic rights are more easily exercised than political rights, immigrants turn to entrepreneurship. Throughout the world, for example, Asian and Jewish immigrants, wherever they have settled, have gone into business for themselves. Recent trends in the United States demonstrate high levels of entrepreneurship in the Vietnamese and Korean populations. One statistical estimate of Korean immigrants in the New York City area concludes that 65 percent of Korean families own at least one business.[12] Indeed, as Table 3-1 indicates, the recent wave of Asian Americans is creating new businesses at a faster rate than any other immigrant group.

Take the example of Jung Pack, a Korean who immigrated to the United States in 1982.[13] Jung works 16 hours a day in his own grocery business even though he has a college degree in business administration and was in construction management back in Korea. Jung says he left Korea because it was too rural and he wanted to live in a big "cosmopolitan" country. But when he arrived in the United States, downward mobility forced him to give up thoughts of a white-collar career to become a self-employed shopkeeper. His career in the United States has been blocked by the language barrier and skepticism about the value of his academic degree. But Jung can probably expect his two children, who will be U.S. citizens, to pursue either professional careers or entrepreneurial opportunities in business services like data processing or management consulting. Meanwhile, Jung says he still dreams of "a better life."

Other negative displacements result from being fired from a job and being angered or bored by current employment. Many bored managers and stifled executives in large corporations are leaving their white-collar jobs looking for challenges and autonomy. According to Harry Levinson, a Harvard psychologist who specializes in career and life-cycle issues, "The entrepreneur, psychologically speaking, has a lot more freedom than anybody in a big corporation."[14] To illustrate this, consider the case of Philip Schwartz, who was an executive with Olin Corporation and Airco Inc. He left his middle-level managerial career to start a business as a wholesaler of packaging materials and cleaning supplies and to find out "who and what I am." He reports that he enjoys the autonomy and action of drumming up business and interacting with customers. He enjoys putting his own personal stamp on his company. Having only four employees, he can create a family atmosphere, relaxed and friendly. He imprints his own values of honesty and dependability on the business, something that no middle-level corporate manager can do.[15]

Middle age or divorce can also provide the impetus for new venture creation. In an unusual example, one entrepreneur recreated his business because of a midlife crisis. Tom Chappell cofounded a personal-care and health-products business, Tom's of Maine Inc. A number of years ago he realized that he was not happy running this business even though he was successful. He went back to school and obtained a master's degree from Harvard Divinity School. His studies there led to him to examine his values and his motivation for managing his own firm. He changed the company's goals, setting its mission to "address community concerns, in Maine and around the globe, by devoting a portion of our time, talent and resources to the environment, human needs, the arts and education."[16]

"Between Things." People who are **between things** are also more likely to seek entrepreneurial outlets than those who are in the "middle of things." Like immigrants, people who are between things are sometimes outsiders. Three examples are offered in the model in Figure 3-1: between military and civilian life, between student life and a career, and between prison and freedom. One example of people who are between things (and one that was never anticipated as a source of entrepreneurs) are the former Communist party members and officials who are now out of political power in Central and Eastern Europe and the former Soviet Union. Yet these individuals may be leading the entrepreneurial revolution in those countries. Street Stories 3-1 describes just a few of these between-things people.

Positive Pull. Positive influences also lead to the decision to investigate entrepreneurship, and these are called **positive pull** influences. They can come from a potential partner, a mentor, a parent, an investor, or a customer. The potential partner encourages the individual with the offer of sharing the experience, helping with the work, and spreading the risk. The mentor raises self-esteem and confidence. Mentors and partners can also introduce the entrepreneur to people inside the social and economic network for new venture activity.[17] There also appears to be a relationship between a parent's occupation and offspring entrepreneurship: Many entrepreneurs have a strong self-employed father figure in the family.[18] Investors that provide the initial financing can convince the individual that "there may be more where that came from." The prospect of a potential customer pulling the entrepreneur into business raises some difficult ethical and economic issues.[19] However, having a guaranteed market for the products or services is a temptation few can resist.

ENTREPRENEURSHIP IN THE FORMER SOVIET UNION: BETWEEN THE PARTY AND THE MARKET

STREET STORIES

3-1

The Young Communist League, also known as Komsomol, used to be the training ground for party members in the old Soviet Union. Then came Gorbachev and *perestroika*. Komsomol began to change, so much so that its leaders began to form a business development scheme that has helped to launch many former members into entrepreneurship. Some Komsomol officials operate private banks, some are in commodities, others have formed conglomerates.

One such former member is Vladislav Sendlenek. Mr. Sendlenek, 28 years old (in 1992), runs an employment agency named Triza. Triza is located in Moscow, using space and offices that were once part of Komsomol's old headquarters. Unlike most government offices, however, the people who work here are always busy and the phone is always ringing. Like Western employment agencies, Triza helps to match employers and employees and collects a fee from the employer upon placement. Sendlenek now has 9 branches in Moscow alone and has plans for 20 to 25 offices nationwide.

How is it that this former party member has not only landed on his feet but is prospering? In his own words:

> My Komsomol connections helped me 100 percent. I know people in business, in all levels of government, all over. Someone starting a business today probably wouldn't have such connections, but you need them to do business in our country. [For example] … the deputy director of the local soft-drink plant knows my work because we were at Komsomol together. I call him and ask him to hire my clients. He does and hasn't regretted it. It's just so much easier to get people to listen to you when they know you.

Source: Adapted from N. Banerjee, "Communist Youth League Cranks Out Some of Russia's Savvier Entrepreneurs," *The Wall Street Journal*, January 9, 1992.

Positive Push. The final category of situations that provide impetus and momentum for entrepreneurship is termed **positive push.** Positive-push factors include such things as a career path that offers entrepreneurial opportunities or an education that gives the individual the appropriate knowledge and opportunity.

Two types of career paths can lead to entrepreneurship. The first is the **industry path.** A person prepares himself for a job or career in a particular industry and learns everything there is to know about that industry. Since all industries display some sort of dynamics, or change, over time, entrepreneurial opportunities that exploit that change come and go. A person with a deep knowledge of the industry is in an excellent position to develop a business that fills a niche or gap created by industry change.

People taking the industry path to new venture creation emphasize that specialized knowledge is the key resource. That knowledge may be embodied in particular people, a technology, or a system or process. The new firm may be a head-to-head competitor, it may serve a new niche not served by the former employer, or it may be an upstream firm (a supplier) or a downstream firm (a distributor or retailer). Whatever its functional form, a spin-off is a knowledge-based business; its primary resources are the competencies and experiences and the networks and contacts being transferred to a new venture.[20] The challenge for these people is to procure the other resources, financial and physical, that will enable them to make their plan a reality.

A different approach, the **sentry path,** emphasizes the money and the deal. People with careers in sentry positions see many different opportunities in many different industries. They tend to be lawyers, accountants, consultants, bankers (especially business loan officers), and brokers. These people learn how to make deals and find money. They have contacts that enable them to raise money quickly when the right property comes along. The challenge for these people, because they are experts in the "art of the deal" and not part of any particular industry, is to locate and retain good managers.

Situational Characteristics

Once the individual's inclination for entrepreneurship has been activated, situational characteristics help determine if the new venture will take place. The two situational factors are perceptions of desirability and perceptions of feasibility.

Perceptions of Desirability. Entrepreneurship must be seen as desirable to be pursued. The factors that affect the perceptions of desirability can come from the individual's culture, family, peers and colleagues, or mentors. For example, the Sikhs and Punjabis who dominate the service station business in New York City also dominate the transportation and mechanics business in their native country. Sometimes religion can spark entrepreneurship and legitimize the perception of desirability. For example, Zen Buddhist communities are historically self-sufficient economically and provide the background for the story of an unusual entrepreneur, Bernard Glassman.

Glassman was born the son of immigrant Jewish parents and trained as a systems engineer. But now he is building a better world by combining Zen entrepreneurship with a mission to help people at the bottom of the economic ladder. After Glassman's introduction to Buddhism, meditation was not enough, spiritually. So he chose the Way of Entrepreneurship. In 1983, he and his Zen community launched Greyston Bakery in Yonkers, New York, supplying high-priced pies and cakes to wealthy consumers. He received his early training as a baker from another Zen sect in San Francisco. Today his bakery grosses $1.2 million and employs 200 people, many previously considered unemployable. Many entrepreneurs say that they want to help the poor and needy, but Glassman has made it happen. Through Greyston's profits he has been able to renovate buildings, provide counseling services, and open a day-care center. He still has to pay close attention to the bottom line, however; Greyston is his mandala and he must concentrate intensely to make it a success.[21]

Perceptions of Feasibility. Entrepreneurship must be seen as feasible if the process is to continue. Readiness and desirability are not enough. Potential entrepreneurs need models and examples of what can be accomplished. They require support from others—emotional, financial, and physical support. Again, ethnic and immigrant networks provide examples. Not only do the Koreans and Indians help train and employ each other in their businesses but they demonstrate by their perseverance and success that it can be done.

Women Entrepreneurs

As society evolves, the perceptions of desirability and feasibility for different groups change too. One of these changes has been the role of women as entrepreneurs. In the United States increasing numbers of women are going into business for themselves and pursuing entrepreneurial careers. Statistics show that nearly one-third of all small businesses in the United States are now owned and operated by women. That amounts to 5.4 million establishments. The number of women-owned firms rose 62.5 percent between 1980 and 1986, compared to an increase of 33.4 percent for male-owned businesses. The growth rate for the founding of women-owned firms continues to be more than double that of men (9.4 percent to 4.3 percent) through the 1990s.[22] The tremendous growth in the number of women-owned enterprises has generated interest in the characteristics of these women entrepreneurs and their new ventures. The primary question is, "Are women-owned businesses different from or similar to male-owned businesses?"[23]

Personal Differences. Research has found that women are more similar to than different from men on most personal and social psychological dimensions. They share many demographic characteristics as well: birth order (first born), marital status (married), and age of first business (30–45). Also, both men and women are more likely to be entrepreneurs if their fathers were self-employed. There are conflicting results concerning the propensity to take risk.[24]

Some personal differences between male and female businesses do exist. Women's work experience is more clerical and retailing oriented, while men have more technical experience. Women entrepreneurs are more likely to be liberal arts majors in college than men; men tend to concentrate on business or engineering. And one important difference regarding the motivation to be an entrepreneur stands out. Men report their major motivation is not to work for others while women report that their major motivation is to create employment and have the ability to balance family and work.

Organizational Differences. There are significant organizational differences between male and female-owned businesses. Women are concentrated primarily in service firms. Their businesses have smaller revenues and numbers of employees and are likely to be younger and organized as sole proprietorships.

The biggest problems reported by women-owned ventures are financial. Men have financial problems too; however, finances are not as consistently the most important problem. Financial problems fall into three categories: (1) the ability to obtain credit and raise capital, (2) cash flow management, and (3) financial planning. Research shows that once women have developed a track record and gained some experience, they are no more likely than males to report financial difficulties.

Environmental Differences. The evidence from the personal and organizational dimensions shows that women face a different environment than men do. This business environment is part of the larger environment of society where women and men are treated differently and have different roles and expectations. This explains differences in education, training and experience, and initial financial impediments. These elements tend to make the woman-owned business appear disadvantaged relative to the male-owned firm.

However, another difference is one of style and orientation. And although this difference also comes from society's expectations and traditions, it is not necessarily associated with poor performance, small size, or any discrimination. Women-owned businesses are more "relational" and have been described as "cooperative networks of relationships."[25] Since relationship capital is one of the types of human resources that can be a source of sustainable competitive advantage, women-owned firms can develop and employ this to their advantage (relative to male-owned ventures).

Minority Entrepreneurs

Perceptions of feasibility and desirability have also changed for nonimmigrant minorities in the United States, primarily Native, African, and Hispanic-Americans. The growth of minority business enterprises (MBE) has been impressive. According to the latest Census Bureau statistics (1987), between 1982 and 1987 the number of African American businesses increased 37.6 percent, Hispanic businesses increased 80.5 percent, and Native American enterprises increased 57.5 percent. Yet despite these gains, MBEs continue to be underrepresented in proportion to the general population. For example, although they represent 11 percent of the population, African Americans own only 3 percent of all small businesses.

In many corporations employment practices (whether deliberate or not is irrelevant) continue to deprive women and minorities of employment opportunities above a certain level or in certain desirable areas. This practice is sometimes referred to as the "glass ceiling," indicating an invisible but nevertheless real limit on how high in the organization women and minorities may rise. To some degree the recent gains in the numbers of minority and women entrepreneurs may be a result of the glass ceiling. Broader curricula in graduate business education and increased enrollments, especially in courses leading to the MBA degree, together with increased access to valuable business experience for women and minorities have produced talented and ambitious people. But these individuals may not be able to attain the full value of their worth because of discriminatory corporate employment practices. The outlet that gives them the best opportunity to apply their education and experience is entrepreneurship. One estimate is that 50 percent of all MBAs say their goal is to be in business for themselves within ten years of graduation.[26]

Historical racial discrimination and prejudice, inferior educational and career opportunities, and an absence of perceptions of feasibility and desirability all impede MBE entrepreneurs. But even when these barriers are removed, as they have been for a segment of the minority population, other barriers to minority entrepreneurship still exist. They exist because of the difficulty that MBEs have in obtaining and controlling resources and the actual or perceived high costs of doing business with MBEs. Of course, to some extent all entrepreneurs face these problems, and some are able to jump the hurdles while others are not. But research has shown that MBEs face higher hurdles, and that diminishes the probability of success.[27] Despite many of these problems, MBEs continue to make headway in overcoming barriers to full entrepreneurial participation in the economy. Some examples of MBE entrepreneurial strategy are offered in Street Stories 3-2.

MBEs face six barriers in the form of transaction costs that impair their ability to form, survive, and succeed. These barriers are:

1. **Environmental complexity**, which limits MBEs' attempts to process important information and act in an advantageous manner. Although all entrepreneurs face complexity, the special rules, situations, and lack of familiarity with business practice makes this more onerous for MBEs.
2. **Opportunism** is the use of guile and deceit to gain self-interest. MBEs are prone to being used by government officials, large corporations, and others to fulfill affirmative action purchasing goals. The cynical manipulation of MBE firms for these programs can be detrimental.
3. **Small numbers.** Although the number of MBEs is increasing, it is still relatively small. The lack of a large pool of MBEs has two important effects: People do not have experience dealing with minority entrepreneurs and therefore MBEs have less relational and reputational capital, and there are relatively few other MBE firms for networking and organizational capital.
4. **Performance uncertainty** by the customers of MBE firms. Because of stereotyping, lack of reputation and experience, and underdeveloped marketing skills,

MINORITY BUSINESS STRATEGIES: OVERCOMING THE BARRIERS

STREET STORIES

3-2

Expanding the Customer Base

George Calhoun bought Southwest Super Food in Montgomery, Alabama in 1984. It was a money loser for one basic reason: The black community that made up 80 percent of his customers lacked the buying power to purchase the more profitable items, and the white community ignored the store. The solution was to broaden the customer base to include whites. He distributed advertising featuring foods that were popular in white households, like steak and diet products. He bought radio time on white stations, put up billboards along white commuting avenues, and renovated the store, adding upscale items like a seafood shop, deli, and bakery. And he installed brighter lights in the parking lot to increase perceptions of safety. He raised the proportion of white employees from 5 percent to 60 percent.

The results are impressive. The customer mix is now balanced. Revenue totaled over $9 million per year, double seven years ago when he started. Calhoun has bought five additional stores and is a partner in a project to build 50 hypermarkets in upscale neighborhoods. "Being able to attract both races gave us the growth to expand," says Mr. Calhoun.

Joint Ventures

Joint ventures provide financing and access for MBEs that are not otherwise available. The Gourmet Co. specialized in contract food service at black colleges. Through contacts made at the food show, and through his attorney, CEO Nathaniel Goldston III became a 35 percent owner in a partnership to serve food at the New Orleans airport and a 35 percent owner in another partnership that caters Atlanta golf courses. "No way we could have done it by ourselves," says Goldston.

But there is a caveat: Some white-run firms solicit black partners as "fronts" so they can qualify for government affirmative purchasing and contract programs. Says one black entrepreneur, "They want it to appear as if I have control; in reality they will have control. I just won't do it."

Getting in the Door

Sometimes the hardest sale is the first one. People don't like change, and they don't want to switch business away from their friends. Robert Charleston of Caravan Technology, a Detroit chemical company, faced this for years. He says, "If you don't have a track record, people don't know about you and don't want to be bothered about you." So he decided to play the game. He hired 15 salespeople, 10 of them white. Customers responded better to white salespersons. And he persevered with repeated visits to customers that wouldn't look past his skin color. But he has succeeded, and revenue has passed the $1 million mark.

Talking to the Top

Middle- and lower-level managers are often the toughest to sell to, according to Albert Abney, president of Abney Manufacturing Inc., of Queens, New York. "They think, 'Why should I give a contract to a black man who is elevating himself above me?'" he says. So Abney changed his tactics and talks only to top management. These people are less status conscious and more interested in the bottom line. Abney does his homework before a meeting with top executives and learns all he can about his customer. "The barriers drop right away when they're overwhelmed with what you know," he says.

Minority Assistance

Black-owned business can take advantage of the many special public and private programs set up to help them. One such program is the Minority Supplier Development Council Inc., a national organization based in New York. It is supported by over 180 major corporations and enables minority firms to gain access to the purchasing executives within these companies.

Sometimes being "helped" can be a liability though. Because federal regulators often push corporations to do more minority business, the stigma of "minority" replaces the reputation the firm has as a reliable contractor. As one black owner put it, "They view me as a minority first, a contractor second. I go to major corporations and they immediately direct me to the minority department."

Mentorship

Sometimes large corporations adopt a smaller minority firm and develop it under a mentor relationship. The mentors give contract advice, lend managers, and provide accounting and legal services. Fannie Watson's mentor is K mart Corp. Under K mart's guidance Fannie's company, Basket Case, grew to provide over 100,000 holiday and gift baskets for K mart each year. And K mart put Fannie into its advertising and television promotions too.

This relationship blossomed into another with American Express Co. to offer $130 gift baskets in the American Express catalogue. "K mart brought this business from a mom-and-pop thing to being a major player in the industry. All the publicity I receive has been free. I couldn't have paid for that airtime," she admits.

Source: Adapted from L. Grossman, "Expanding Horizons," *The Wall Street Journal*, April 3, 1992, pp. R5-R7.

MBE firms often have a difficult time convincing the customer that they can produce high-quality outputs and services.

5. **Information asymmetry**. Because of their limited access to the "old boy networks" that operate in most industries and geographic regions, MBEs often lack the quality or quantity of timely information needed to compete with their better-connected competitors.
6. **Cost of prejudice** is a real barrier to many minority firms. They must try harder just to keep up as they face racial prejudice and must negotiate with people who are very uncomfortable in these situations.

PROCESS MODELS

At the end of the process depicted in Figure 3-1, the new venture creation process begins. The preentrepreneurial conditions described end in the entrepreneurial event, that is, in the creation and management of a new venture. One model of this process comprises five components:[28]

- *Initiative.* An individual or team, having been brought to the state of readiness by personal factors and by perceptions of desirability and feasibility, begin to act. Evidence of initiative usually includes scanning the environment for opportunities, searching for information, and doing research.
- *Consolidation of resources.* Levels of resource needs are estimated, alternatives for procurement are considered, and timing of resource arrival is charted and eventually consolidated into a pattern of business activity that could be called an organization.
- *Management of the organization.* The business's resource acquisition, transformation, and disposal are routinized and systematized; those elements that are not easily systematized are managed separately.
- *Autonomous action.* The management of the new venture is characterized by free choice of strategy, structure, and processes.
- *Risk taking.* The initiators have put themselves at risk. They are personally affected by the variability of returns of the business and by its possible success or failure.

Another process-oriented model by Stevenson emphasizes entrepreneurial behavior toward resources. This model makes two valuable contributions to our understanding of the entrepreneurial process: (1) It recognizes that no entrepreneur behaves in an entrepreneur-like manner all the time. There are forces acting upon the individual that sometimes make entrepreneurial behavior appropriate and that at other times make administrative or managerial behavior appropriate. (2) It emphasizes that the commitment and control of resources are as important to the process as environmental scanning and opportunity recognition.[29] Each entrepreneur assesses the forces pushing for entrepreneurial action and those requiring administrative action and then makes the choice that is best for the new venture. Table 3-2 presents the six phases of the Stevenson model in summary form.

Strategic Orientation

The first dimension of the model in Table 3-2 focuses on the strategic orientation of the entrepreneur. The pure entrepreneur scans the environment and reacts solely to changes and opportunities in that environment without concern for the resources necessary to implement the venture. As we will see in Chapter 4, changes in the environ-

Table 3-2

THE STEVENSON MODEL OF THE ENTREPRENEURIAL AND MANAGERIAL PERSPECTIVES

Key Business Dimension: Entrepreneurial and Managerial	*Entrepreneurial Perspective*	*Managerial Perspective*
Strategic Orientation Entrepreneurial: Driven by perception of opportunity Managerial: Driven by resources currently controlled	Diminishing opportunity streams Rapidly changing: Technology Consumer economics Social values Political rules	Social contracts Performance measurement criteria Planning systems and cycle
Commitment to the Opportunity Entrepreneurial: Revolutionary with short duration Managerial: Evolutionary, of long duration	Action orientation Short decision windows Risk management Limited decision constituencies	Acknowledgment of multiple constituencies Negotiation of strategy Risk reduction Management of fit
Commitment of Resources Entrepreneurial: Multistaged with minimal exposure at each stage Managerial: Single-staged with complete commitment upon decision	Lack of predictable resource needs Lack of long-term control Social need for more opportunity per resource unit International pressure for more efficient resource use	Personal risk reduction Incentive compensation Managerial turnover Capital allocation systems Formal planning systems
Control of Resources Entrepreneurial: Episodic use or rent of required resources Managerial: Ownership or employment of required resources	Increased resources Long resource life compared to need Risk of obsolescence Risk inherent in any new venture Inflexibility of permanent commitment to resources	Power, status, and financial rewards Coordination Efficiency measures Inertia and cost of change Industry structures
Management Structure Entrepreneurial: Flat with multiple informal networks Managerial: Formalized hierarchy	Coordination of key noncontrolled resources Challenge to legitimacy of owners' control Employees' desire for independence	Need for clearly defined authority and responsibility Organizational culture Reward systems Management theory
Reward Philosophy Entrepreneurial: Value driven and performance based Managerial: Security driven and promotion oriented	Financial backers Individual expectations Competition	Social norms Impacted information Demands of public shareholders

Source: Adapted from H. Stevenson, M. Roberts, and H. Grousbeck, *NEW BUSINESS VENTURES AND THE ENTREPRENEUR*, © 1989 Richard D. Irwin, pp. 18–19.

ment are crucial in determining the timing and evaluating the characteristics of opportunities. Also, within the environment are the constraints and contingencies that affect how much the new venture can be forgiving, rewarding, and enduring.

The pure manager, or the trustee, is entirely focused on the resources currently controlled and not at all on the environment. Embedded in an existing organization and social network, the pure manager is shielded from the environment by other organizational structures that absorb the uncertainty produced by the environment.[30] The manager must attend to the pressures of current social contacts and the systems and cycles of the existing business. By doing those jobs that the organization can measure and reward and by meeting objectives such as capacity use and sales growth, the manager reduces risk.

Commitment to the Opportunity

The next dimension is the commitment to the opportunity. The pure entrepreneur attempts to gain the economic advantage of being the first mover. The commitment can be made very quickly, in a revolutionary mode, and it need not last a long time, only as long as is necessary to gain advantage. Risk is inherent and cannot be eliminated, only managed. The entrepreneur has only a few constituents to please and after their approval can act immediately.

In contrast, the pure manager has a political rather than an economic process to navigate. The manager is required to meet and reach agreement with multiple constituents. Political negotiation is a fact of life, and this stretches decisions out over long periods of time. Decision making is evolutionary, moving slowly through stages of incremental improvements. Pure managers can reduce risk for themselves and their careers by carefully following the administrative process and having the organization "sign off" on the decision to make a commitment.

Commitment of Resources

Having made the commitment to the opportunity, the next stage in the process is the commitment of resources. The pure entrepreneur might not be deterred from pursuing an opportunity without any resources. He or she might be prepared to act as a middleman or broker and receive a promoter's fee for putting the deal together entirely out of other people's resources. Although such an arrangement might be profitable, it is questionable whether such a person is an entrepreneur as defined in Chapter 2. The real issue for the entrepreneur is not how to get by completely on other people's resources but rather how to get needed resources to gain a competitive advantage. The goal of the entrepreneur is to obtain as many resources as possible subject to the constraint that they can be obtained in a multistage fashion with minimal exposure at each stage.

If the goal is a total commitment of the resources, the entrepreneur is behaving administratively. However, the administrator goes even further, demanding a commitment of all resources as a condition for action. The pure manager likes to have all of his or her "ducks in a row" before proceeding. The pressures of personal risk reduction and formal planning systems insist on this. The entrepreneur, on the other hand, does not require all resources to be present at the beginning, only those that provide competitive advantage. In fact, the entrepreneur realizes that because resource needs in the future are unpredictable, there are penalties for procuring resources in advance:

1. The first is the lost earning power of the resource that is acquired too early. Rather than purchase a building far in advance of its use, the entrepreneur prefers liquidity.

2. The second is the potential for acquiring the wrong resource. There is the sunk-cost loss of acquiring resources that, because of changes in the environment and the unpredictability of events, are never needed at all.

Control of Resources

The fourth stage of the Stevenson model focuses on the issue of who controls the resources and for how long. As we indicated, the issue of the control of resources is problematic and paradoxical. The pure entrepreneur might structure the opportunity so that resources are never owned or controlled by the firm. This might represent an ideal case, but it is unrealistic in its extreme version. If strategic resources are never owned or controlled, then no competitive advantage can be obtained and no rents can be collected; in fact, the entrepreneur pays rent to others. If the rented resources are strategic, the owner or lessor can raise the rents until there is no profit, creating a cost-push squeeze to the entrepreneur. The entrepreneur's attempts to raise prices will be matched by increases in rents. Such appropriation of profit is the result of nonownership and lack of control of resources.

It is true, however, that certain resources, especially nonstrategic ones, do not need to be controlled or owned. Permanent control of resources leads to inflexibility and sunk-cost thinking. Resources become obsolete and require replacement. A resource may be needed for only a short time, after which renting may be the better arrangement. The rational entrepreneur does not seek to own and control resources that are nonstrategic and that lack any of the four attributes of SCA.

The pure manager, on the other hand, seeks to own and control all resources, both strategic and common. The manager faces different pressures and different problems. Managerial power, status, and rewards are often directly related to the physical body of resources controlled. Within the firm, coordination sometimes take precedence over efficiency and total-return goals. When this is the case, ownership of resources is seen as desirable, even when the resource is a common, noncritical one.

Management Structure

In the next stage, the organization is formed, and the management structure is established. The pure entrepreneur prefers a flat organization with multiple informal networks. This means few chiefs—just the entrepreneur with perhaps a small top management team—and many warriors. This type of organization stresses informality and flexibility. Because many nonstrategic resources are uncontrolled, coordination is a key task. The organization's informality may cause employees to feel only loosely connected to the organization. This loose connection may not foster the loyalty needed to keep employees from starting up on their own at some point.

In contrast the pure manager follows the bureaucratic mode in designing and implementing the organization. Strong emphasis is on hierarchy and formal division of labor. Authority and responsibility are clearly defined. Rules and policies are definitive, with changes in the environment dealt with only by specifically assigned individuals.

Reward Philosophy

The final stage of this process model is the implementation of the organization's reward philosophy. Entrepreneurial firms design incentives and rewards around the creation of wealth and value. The new venture, for practical reasons, cannot afford large cash payouts in its early years. The deferment of compensation is commonly rewarded with equity in the firm. Equity will have value only if the firm survives, grows, and earns profits. The entrepreneurial approach emphasizes total firm performance, the collective result of the entire management team's efforts.

Conversely, the managerial approach to rewards is security driven, resource based, short term, and promotion oriented. Although larger firms are increasingly using deferred compensation and stock options for their top employees, these rewards are not as closely linked with firm performance as are the equity rewards in the new venture or start-up organizations. Also, recent demands by public shareholders to limit executive compensation will further erode the linkage.

Process models show that all entrepreneurs tend to go through similar stages of development when starting their businesses. Although certain tendencies are specific to entrepreneurial behavior, an element of managerial behavior is always present. The successful entrepreneur blends the two perspectives, entrepreneurial and managerial, as appropriate for the opportunity and resources available.

SPIN-OFFS AND KNOWLEDGE BASES

The knowledge, skills, and abilities of people are often their most important resources for new venture creation. As we have seen, this knowledge base can come from positive or negative factors in a person's life and career. One of the most common starting points for new venture creation based on previously acquired knowledge is the **spin-off**. A spin-off is a new firm created by a person or persons leaving an existing firm and starting a new firm in the same industry. A combination of education and experience led an anesthesiologist, the late Dr. David Shoenstadt, to find a niche in the insurance market. As indicated in the accompanying Street Stories 3-3, Dr. Shoenstadt used his early experience and knowledge as a physician as a springboard for his second career as an entrepreneur.

Spin-off Environments

Spin-offs commonly occur in similar environments. In the past, spin-offs were most frequently in the automobile and construction industries. The most frequent examples of spin-offs today are in high-tech businesses biotechnology, semiconductors and computers, consulting, law, and medicine (and medical devices). What do these diverse industries have in common? First, emerging industries and growing industries are prime breeding grounds for spin-offs. In these industries pockets of information possessed by employees can be disseminated throughout the market. This information is mobile; it is embodied not in a machine or particular location but in individuals, a process, or a technique. Both the knowledge and the individuals can be transferred at very low cost to just about any place on earth.

THE DOCTOR FINDS A NICHE

STREET STORIES

3-3

Dr. David Schoenstadt was an anesthesiologist with a thriving practice in Kansas City, Missouri, when he finally had had enough of the ever-rising, sky-high rates for medical malpractice insurance. Anesthesiologists like Dr. Schoenstadt were paying the price for less safe medical specialties such as obstetrics. So he formed his own insurance company especially created for anesthesiologists, Preferred Physicians Mutual Risk Retention Group. Because of its ability to screen physicians closely, his company has been able to hold down the premiums it charges. As a result, it has captured a large slice of the medical malpractice insurance for the practitioners of the relatively safe field of anesthesiology.

Dr. Schoenstadt was able to demonstrate how knowledge of a highly specialized field can lead to a successful business start-up, even in the highly competitive area of insurance, an industry dominated by very large companies. And the success of the anesthesiology group has led to the creation of other groups for orthopedics and obstetrics.

How effective was Dr. Schoenstadt's company in lowering rates? In his own words: "In 1987, anesthesiologists spent about $400 million on malpractice insurance, or about $27,000 each. Today the cost is closer to $150 million, or $10,000 each. We think we're the major reason."

There were two keys to success: the doctor's knowledge and experience in weeding out high-risk physicians and his ability to respond quickly to changes in the legal environment for medical insurance. Screening procedures are rigorous. Other doctors screen applicants' records and analyze their practices. Background checks for alcohol and drug abuse are routine, as are checks for previous claims, traffic accidents, credit difficulties, and psychological problems. Only four out of five applicants are accepted.

And a change in a federal law, enacted in 1986, permits a liability insurance company that meets certain guidelines in one state to sell insurance in the other 49 without meeting all their licensing requirements. Preferred Physicans took full advantage of this opportunity.

Source: Adapted from Brent Bowers, "Finding a Niche Based on Experience," *The Wall Street Journal*, February 6, 1992.

Also, firms in emerging industries are likely to be somewhat new themselves. In reality, the primary goal of an emerging industry is to develop a collective strategy that enables it to gain acceptance for its products in the face of competition from longer-established firms and industries. Thus, the spinning off of new firms adds to the overall legitimacy and credibility of the infant industry. Image and reputation are important for first-time buyers of new products produced by emerging industries. All firms in these industries have an interest in serving the new customers in high-quality, highly reputable ways. The more firms of high quality and sound reputation available, the more likely the buyer is to believe that the industry is credible and will be around for the long haul.

As industries mature, information about the industry and about its markets, products, and processes becomes widely disseminated. As such, it is an advantage to no one. As industries become more capital intensive, the "secrets" of the industry tend to become embodied in the physical properties of the plant, equipment, and machinery employed in the production process. It is thus difficult if not impossible to appropriate these properties, either physically (too heavy), legally (too well protected), or financially (too expensive). No person or group is seriously considering spinning itself off into the auto industry these days.

In addition, in mature industries where slow growth is characteristic, a spin-off is seen as competition. The market is seen as a zero-sum game; market share gained by one firm is taken from another firm. Thus, a spin-off in a mature market is more likely to be resisted by the existing firm. This resistance can take the form of noncompete contracts for employees, or, when noncompetes are not legally possible, the threat of strong retaliation if a new firm is formed.

Table 3-3

TAXONOMY OF KNOWLEDGE ASSETS IN THE RESOURCE-BASED THEORY

Extent of Imitability		
Highly Imitable		*Imperfectly Imitable*
Articulated knowledge	↔	Tacit knowledge
Teachable knowledge	↔	Nonteachable knowledge
Skills observable in use	↔	Nonobservable in use
Simple and singular knowledge	↔	Complex and multidimensional knowledge
Independent skills	↔	Interdependent skills

Source: Adapted from S. Winter, "Knowledge and Competence as Strategic Assets," in D. Teece, ed., *The Competitive Challenge* (Cambridge, MA: Ballinger, 1988), pp. 159–184.

Transfer of Knowledge Assets

The knowledge assets transferred to the new firm in a spin-off have certain dimensions that can be analyzed to determine whether they possess the four attributes of competitive advantage. Table 3-3 displays the opposing poles of the dimensions of knowledge.[31] The characteristics on the right-hand side of the table are more difficult to transfer, but if the new management team is able to successfully transfer them, the firm will gain momentum toward competitive advantage.

For example, tacit skills, knowledge, and competencies are based on rules and behaviors that are unknown to the person performing the tasks. Individual skills are often tacit; people cannot explain the process they go through in applying their skills. Evidence even suggests that there are different brain structures for procedural (process) knowledge and declarative (content) knowledge.[32] For the organization, tacit knowledge comes embedded in the people who work for the firm. Other members of the firm may have articulated knowledge of the kind reflected in: "Oh, yes, we have someone working here who knows how to do that." Much of the relational skill and knowledge in an organization is tacit; some people know some things about who can get things done under what conditions, but most company participants do not know the details of these relationships.

Knowledge that is not teachable is also difficult to transfer to the spin-off, but it is also rare and hard to duplicate if it comes with the new venture management team. Skills and competencies that are observable in use can be copied and transferred. Complex knowledge is more difficult to copy than simple knowledge; an independent skill is easier to transfer than one that requires cooperation, teamwork, or coordination.

When individuals leave one firm to start another in a related industry, they take with them the knowledge and competencies they acquired and developed. The most important elements for the new business are the hardest to transfer, yet they are also the most valuable, rarest, and hardest to duplicate.

We see, then, that knowledge and competencies that are widely available and easily taught and transferred cannot be the source of competitive advantage for a new venture. But this does not mean that entrepreneurship cannot be taught.

CREATIVITY

When Albert Einstein said, "Imagination is more important than knowledge,"[33] he was talking about the development of new theories of physics and the universe. Without realizing it, he was also talking about economics and entrepreneurship. All entrepreneurial processes begin with an idea, with the creation of something new. Creativity is associated with revolution, change, and dynamism.[34] As this chapter emphasizes, knowledge and experience that is widely available, while valuable, is not rare and is not a source of competitive advantage. Imagination, or creativity, is a key to advantage because it can lead to products, services, and organizations with all four attributes in the resource-based model.

The Concept of Creativity

Creativity initiates a product or process that is useful, correct, appropriate, and valuable to a task that is heuristic rather than algorithmic.[35] A **heuristic** is an incomplete guideline or rule of thumb that can lead to understanding, learning, or discovery.[36] It is a fuzzy map of where you are and where you are going, but the roads are not completely drawn in. Heuristics serve to stimulate the person to learn more for himself, similar to determining how to get from A to B on a blurry, indistinct road map.

An **algorithm**, in contrast, is a mechanical set of rules, a preset plan of operations for problem solving, decision making, and conflict resolution. Flipping a coin is an algorithm because the number of sides of the coin and the indicators of head and tails predetermine exactly what the outcomes will be once the coin is tossed in the air.

But perhaps a better question than, "What is creativity?" is "Where is creativity?"[37] Creativity occurs at the dynamic intersection of three forces:

1. The individual, with his or her intelligence, experience and dispositions.
2. The domain of knowledge within which the particular individual has chosen to work.
3. The field or social context within which the merits of the work or product are evaluated and judged.

We are now familiar with the first force, that of the individual. Some of the attributes of creative people discussed in the literature on creativity are curiosity, openness to new experiences, tolerance of ambiguity, independence of judgment, sensitivity to problems, flexibility, and originality.[38] This trait approach is insufficient and has many of the same flaws as the general trait approach to entrepreneurship presented earlier in this chapter.

We also need to consider the domain of knowledge. Here we can be referring to arts, like music or painting; sciences, like computer science or biology; or a business area, like finance, marketing, product development, or starting a new venture. People can be creative only if they are prepared to be creative, and this means they must have some understanding of a knowledge base and some skills at manipulating this base. It is also true that one can know too much about a domain of knowledge and uncritically accept all of its forms, premises, assumptions, and values. Such an individual might have a difficult time producing **divergent thinking**—ideas that modify or substitute for conventional wisdom.

The last force is the field or social context. For an idea or product to be judged creative (as opposed to simply crazy or weird), it must be judged to be valuable and meritorious. Who does the judging? In the case of fine art, there are critics, curators, and experts. In the case of business-related creativity, it is the organization and inevitably the market. If it sells, it was creative—if it does not, it was not. This sort of retrospective evaluation is part of the paradox of creativity. If there were rules that one could formulate a priori, the result would be an algorithm, and its product could no longer be considered creative.

Types of Creative Behavior

All creative behavior can be described in one of three general modes. **Creation** is the act of pure invention—it is making something out of nothing. A writer facing a blank page creates characters, plot, and action. Beethoven created symphonies from scratch. We usually think of these as the only types of creativity. Because we associate it with heroic efforts and classic works of art and science, we tend to believe that creativity is a gift from the gods and available to only a chosen few. But other types of creativity are just as important and within the reach of mere mortals.[39]

Synthesis is the creative act of joining together two previous unrelated things. It is bringing together the telephone with the computer or a theory of evolutionary biology with economics. Synthesis is the creativity we find in humor, when two incongruous elements are combined to make something appear funny.[40] Synthesis can have a major impact on a market or a product, such as when the Japanese joined methods of statistics, quality control, and systems thinking in automobile manufacturing. The synthesis of direct-selling methods and the cosmetics industry created Avon. And the synthesis of the computer with the concept of "small and personal" led to the creation of Apple Computer. Easy in retrospect, all successful creative acts look logical and predictable through the historical lens because they work. But at the time of the creative act and the birth of the product, there is no way to judge the value of any outcome.

The final type of creativity is **modification**. Modification occurs when a thing or a process is improved or gains a new application.[41] A modification can be quite small: a change in design, a new floor plan for an office, a new way to solder electrical connections along an assembly line. Clearly no heroic acts are needed for a modification, and therefore creativity is within the reach of all people and is a natural part of all human experience.

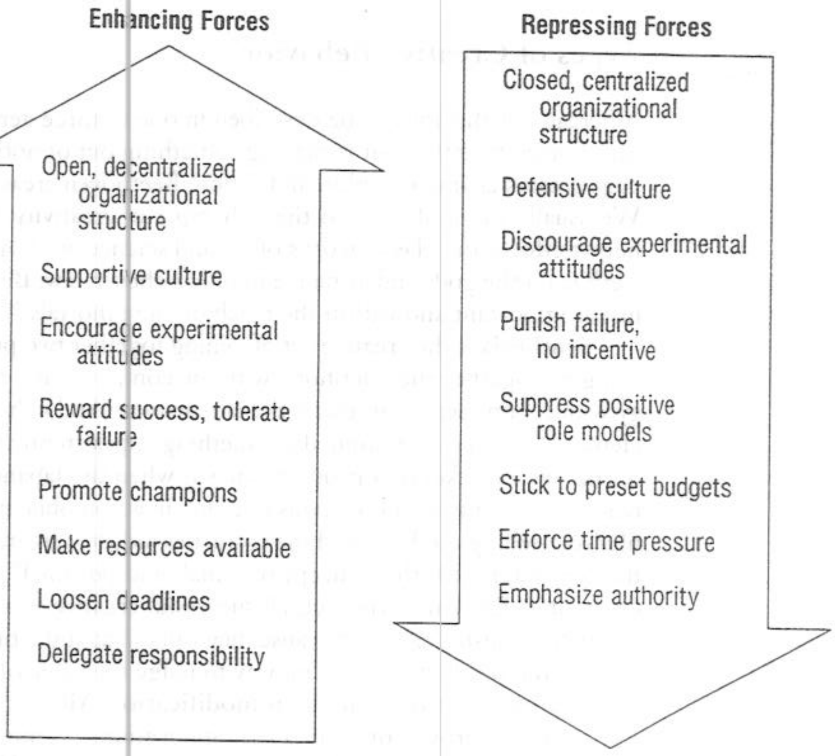
Creativity and the Resource-based Theory

What are the links between creative entrepreneurship and competitive advantage? Because creative ideas are based on imagination, they are hard to duplicate, rare, and intuitive, not easily substituted with expert systems and artificial intelligence. Creativity has always been of interest to researchers and practitioners in the field of new venture creation, not because it is magical and metaphysical, but because it leads to economic advantage. The requirement that creative behavior be of value (as opposed to simply weird) is clearly in line with our resource-based model. A creative act is not valuable unless it is appropriate to the situation—here, the creation of a new product or process. The creative act must, therefore, contribute to the new venture's objectives of gaining revenues or lowering costs (and this includes all the nuances and permutations in the firm's revenue and cost functions).

All humans possess creative abilities to some extent—the evidence is in our dreams. But creativity is rare in organizations because there are factors that suppress creative thinking, creative behavior, and the implementation of creative programs and processes. We can employ a force-field analysis that pits the repressors of creativity against the enhancers of creativity. This force-field analysis, presented in Figure 3-2, has utility for the design of organizations that want to foster creativity.

Figure 3-2

FORCES ENHANCING AND REPRESSING CREATIVITY


Enhancing Forces
Open, decentralized organizational structure
Supportive culture
Encourage experimental attitudes
Reward success, tolerate failure
Promote champions
Make resources available
Loosen deadlines
Delegate responsibility
Repressing Forces
Closed, centralized organizational structure
Defensive culture
Discourage experimental attitudes
Punish failure, no incentive
Suppress positive role models
Stick to preset budgets
Enforce time pressure
Emphasize authority

Source: Adapted from J. Kao, *Managing Creativity* (Englewood Cliffs, NJ: Prentice Hall, 1991).

As Figure 3-2 illustrates, the barriers to innovation and creativity in large organizations are quite real, for the repressing side has a decided "big business" slant to it. Inventors and entrepreneurs need long time horizons, flexibility, incentives, and motivation to succeed. In large organizations, the forces against creativity may be so strong that separate business units may be required.[42]

Creativity represents one of the most important resource advantages because it is so difficult to duplicate. Its elusiveness has stumped philosophers and entrepreneurs since the beginning of recorded time. Attempts have been made to stimulate the creative impulse, from meditation techniques to computer simulations.[43] Not only should entrepreneurs covet and encourage creative impulses in themselves and others, they need to engender a culture that transforms creative energy into economically (as opposed to psychologically) rewarding forms.

Creativity Techniques

An individual can learn to be more creative by understanding the process of creativity and mastering a few simple techniques.[44] The techniques can be used by a single person or applied within a group setting. The key to using these techniques is to overcome linear thinking and the traditional linkages between things and events and to employ **lateral thinking**, which encourages divergent production by challenging concepts, perceptions, and assumptions and by provoking incongruity.[45]

The Creative Pause. Trying to force a creative solution is impossible. But an effort can be made. The creative pause is a deliberate interruption in the routine flow of work to concentrate on a point or process. What point? It doesn't matter. And there need be no particular reason for that pause at that time. But it is a technique that makes people aware that they are doing something routine and question why are they doing it a particular way, or if they should be doing it at all.

Focus. Simple focus is paying attention and concentrating. It does not require a problem to solve; it is simply questioning the linear thinking embedded in any routine. The target of the focus can be an object, a process, or a policy. Specific focus has a defined target, such as looking for new ideas to serve customers or generating creative ways to reduce the cost of handling materials. Although the specific focus technique requires the user to know the domain, it does not depend upon increasing the amount of knowledge but rather in using the knowledge in new ways.

Challenge. The creative challenge questions why something is done a certain way and if there are other ways of doing it. It challenges the historical and traditional processes. It is not meant to be an exercise in criticism. A challenge can be made to something that works quite well, but it looks for something better. The creative challenge does not accept that there is one best way to do anything or that the current way is the optimal way.

Alternatives. Generating alternatives is the most basic creative response. However, we usually engage in this exercise only when we feel a need or a problem. Creative alternatives can be generated at any time and to anything, even when there is no crisis. Creating alternatives is a two-stage process: (1) find out what alternatives are already available, because there is no sense reinventing the wheel, and (2) design new alternatives or ways to do things. The first stage is information gathering, but the second is creative.

Provocation. Creative provocations are thought experiments. Deliberate provocations force one to consider incongruities, discontinuities, and seemingly impossible events and situations. The key is the childlike question, "What if?" and working backwards from there to determine the implications of the question. Einstein asked, "What if I could ride on a beam of light? What would I see?" and from this thought experiment derived the conditions of relativity.

Mind Mapping. This is a technique that works through mental and linguistic associations.[46] It enables the user to break through the "wall of rationality" surrounding a proposition. It is a multistage process that starts with a clear statement of a problem in search of a creative approach. Free association follows, and a map of free associations is generated until some arbitrary limit is reached. Then the map is studied for patterns, novelties, and interesting insights.

Six Thinking Hats. This is a group technique.[47] Each member of the group is assigned a role in a discussion, or the roles can rotate as required. Each role is designated as a "hat." Each hat is identified with a color:

- **White hat** thinking is neutral and carries information and data. The person wearing the white hat is nonjudgmental and emphasizes the amount, nature, and availability of data.
- **Red hat** thinking has to do with intuition, hunches, and emotions. It is the "gut feeling" that one has about a situation. People are reluctant to share their emotions unless given permission by this role.
- **Black hat** thinking is judgmental. It is critical and its role is to avoid errors, illegal behavior, and infeasible solutions. Do not overuse the black hat, because nothing kills creativity faster than judgment and negative feedback, but sometimes it is necessary to avoid a major mistake.
- **Yellow hat** thinking is optimistic and logically positive. It tries to see the good side of any suggestion or situation. It searches for benefits and possibilities. It is less natural than the black hat and needs to be encouraged.
- **Green hat** thinking is developmental and growth oriented. It is searching for new ideas, being provocative, and asking for alternatives. The green hat asks directly for creative effort from other members.
- **Blue hat** thinking is concerned with organizing and controlling the thinking process. The blue hat sets the agenda and the procedures the group will follow, assigns the roles, and asks for comments. The blue hat summarizes the conclusions. This is usually the chairperson, but anyone can offer blue hat suggestions.

The systematic use of these techniques ensures that a creative effort is made. No one, however, can guarantee that a creation, synthesis, or modification that possesses the four attributes of sustainable competitive advantage emerges from the process.

SUMMARY

In this chapter we approach the personal side of entrepreneurship from the resource-based perspective. Complex psychological and sociological processes interact to produce unique individuals, and this uniqueness may be valuable, rare, impossible to duplicate, and without real substitutes. In the process of forming a new venture, the entrepreneur must exploit his or her personal resource base to generate the momentum needed to launch the venture.

When the venture is launched from another organization, the spin-off must have resources that go beyond the public knowledge and information the entrepreneur gleaned while working for the incumbent firm. Knowledge itself is a resource, but it provides competitive advantage only when it has the four attributes. Because knowledge is mobile, it is difficult to keep it within the firm for long-term SCA.

Finally, we briefly explore the role of creativity. What makes creativity valuable, rare, and imperfectly imitable is its heuristic nature. It cannot be mapped out and preplanned. Yet situations and characteristics of individuals can be manipulated to increase the odds of creative thinking. By mastering a few techniques, people can exert more creative effort, but there are no guarantees that the creative effort will always lead to valuable ideas.

Key Terms

Need for achievement (n ach) *48*
Locus of control *48*
Externals *48*
Internals *49*
Risk-taking propensity *49*
Negative displacement *51*
"Between things" *52*
Positive pull *52*
Positive push *53*
Industry path *53*
Sentry path *53*
Environmental complexity *55*
Opportunism *56*
Performance uncertainty *56*
Information asymmetry *58*
Spin-off *62*
Creativity *65*
Heuristic *65*
Algorithm *65*
Divergent thinking *65*
Creation *66*
Synthesis *66*
Modification *66*
Lateral thinking *68*

Discussion Questions

1. Is entrepreneurship more like a profession that can be learned, like medicine, or more like an art?
2. How are entrepreneurs psychologically different from managers? How are they similar?
3. Describe the sociological approach to entrepreneurship. How can this approach be used to promote more entrepreneurship within the economy?
4. If immigrants are a major source of entrepreneurship in the economy, why do most countries limit the number of immigrants they allow in each year?
5. What are the special problems and opportunities for women entrepreneurs?
6. What are the special problems and opportunities for minority entrepreneurs?
7. How are entrepreneurs behaviorally different from managers? When can we expect entrepreneurs to behave managerially? When can we expect managers to behave as entrepreneurs?
8. What is a spin-off? How do spin-offs help create new ventures?
9. Is it ethical for a person to gain information, knowledge, and experience gained on a job, then quit that job and go into business, using that experience as the major source of competitive advantage?
10. What is creativity? Why does creative effort not necessarily lead to useful products and services?

Exercises

Beginning with this chapter, the exercises are designed to prepare the student to develop and write a business plan. These exercises can be done either individually or in a group setting.

1. Exercise envisioning. Sit in a quiet and dark room and begin to think about what kind of business you would like to start. Close your eyes and let your mind's eye see yourself working in that business. What do you see? Is it a manufacturing business, a service or retail outlet, a construction site, or something else? Notice the physical setting and the people around. What are they doing? Which are employees and which are customers? Are the people happy? Busy? Confused?

   Now write down what you saw in as much detail as you can recall. Why do you think this vision came to you? Could you actually start a venture of this type? How?
2. Develop 20 ideas for a new business. Then take these ideas and subject them to the creativity techniques described in the chapter. Make the 20 ideas into 100 ideas, no matter how

unusual or apparently strange. Sort the ideas into the 10 best, and once again, use the creativity techniques to make the concepts more original. At the end of the exercise you should have 20–30 truly creative new business ideas.

3. In a group, take the best ideas from each person and do the Thinking Hats exercise. Each person should be assigned a "hat" or allow the "hats" to rotate as needed. Do this until each group has at least four creative and unique ideas for a new business.
4. For each of the group's or individual's best ideas, do the following short assignment:
   a. Describe the business in 25 words or less. The description should include the product/service, the customer, and the technology employed.
   b. Describe the opportunity that you believe this business exploits. In other words, why do you think this is a great business idea?
   c. Describe the resources you believe you would need to execute this new venture idea. Use the six categories from Chapter 2. Which resource(s) will be the source of competitive advantage?
   d. Estimate how much money it would cost to actually get this business started. The estimate will be very rough, but try to make an educated guess.

Discussion Case

HOW TO MAKE MONEY IN A COPYCAT BUSINESS

Kenneth Lai is a copycat. He makes his money aping the world's most famous fashion designers and selling this apparel to the middle class in malls throughout Hong Kong. And he is quite successful at what he does. His company, Mercuries-Jeantex Holdings Ltd., will gross close to $100 million dollars in 1993, up from $68 million the year before. Before revealing his secret, a little background on Mr. Lai is needed.

He comes from a poor family, and he dropped out of high school. At 19 he joined the crew of a freighter with the objective of making captain. But he became bored with the easy promotions that made him an officer before he needed a regular shave. He resigned after three years, and at a friend's suggestion joined a U.S. merchandising firm. He quickly rose in management, making contacts and cultivating people along the way.

He set out on his own in 1980 with $30,000 in borrowed cash. He launched the first of his retail fashion stores that year. He now has 53 stores in Hong Kong, 9 in Singapore, 16 in Taiwan, and 2 in Malaysia. About half the firm's turnover comes from the clothing business, the rest from an assortment of other enterprises. About 90 percent of the clothes are produced in China. He employs nearly 30,000 workers.

Mr. Lai has found the formula for copy-cat success by closely following industry trends and mass producing in China. He has three types of stores: Theme, Theme Plus, and Body Glove. Theme stores target young women professionals and offer a value-for-money approach. He has a recognizable brand name, and his line is narrow but selective. Body Glove is a trendy U.S. label that began as swimwear. Mr. Lai spotted its potential and has most of the Asian rights through 1997.

Mr. Lai says he has three advantages over other manufacturers and retailers that have enabled him to thrive when others cannot: total vertical integration (everything is done in-house), a skilled design team that can imitate the product but save on the costs, and his own gift for picking up fashion trends. Recently he copied the L.A. Gear gimmick of flashing red taillights on the backs of sneakers. Now some of Body Glove's sneakers also have the lights. Mr. Lai thinks this will pay off big.

"I have the commercial eye. It's either in you or it's not. You don't learn it at school. We are not in a position to create fashion. And we don't want to. We have a whole team of designers but we don't design. We travel the world and find samples from all different designers and different brand names and then we copy the design. Everyone copies, but I am the only one being honest about it," concludes Mr. Lai.

Source: Adapted from A. Blass, "Retailer Sells Imitation Fashions Targeting Middle-Class Market," *The Asian Wall Street Journal,* October 19, 1993, p. H1.

Questions

1. How closely does Lai's career follow the sociological model presented in Figure 3-1?
2. What resources does Lai and his organization possess that helps to give him a sustainable competitive advantage?
3. Is this advantage permanent? How can he protect it? Which elements cannot be protected in the long run?
4. What other areas of business could you recommend to Lai that he might be successful in? In other words, what resources are transferable to other situations?

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12. Professor Pyong Gap Min, quoted in D. Lorch, "Ethnic Niches Creating Jobs That Fuel Immigrant Growth," *The New York Times,* January 12, 1992.

13. Lorch, 1992.

14. Based on a story by Timothy Noah that appeared in *The Wall Street Journal,* August 2, 1992.

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17. S. Birley, "The Role of Networks in the Entrepreneurial Process," *Journal of Business Venturing* 1 (1985): 107–118. We will return to this topic in a later chapter.

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19. This is not an uncommon situation, but it is a difficult one. Consider the employee (for example, an accountant, salesperson, or consultant) who services a customer who then encourages the employee to go into business for himself. Implicit here is the notion that the customer will switch to the new entrepreneur. This is a common situation. But is it ethical? Does the employee have a responsibility to an employer not to steal the customer? Should the employee report the offer and try to do a better job servicing the customer within the current employment relationship? There is an economic side as well. A firm with a single customer is vulnerable. The customer may feel the entrepreneur is in some way obligated to give the customer the best deal because of the history between them. The new firm's employees will, of course, know the circumstances of their firm's founding and may replicate it when their time comes.

20. Much of the discussion on spin-offs is adapted from D. Garvin, "Spin-offs and the New Firm Formation," *California Management Review* 25 (1983): 3–20.

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22. S. Nelton, "The Age of the Woman Entrepreneur," *Nation's Business* 77 (May 1989): 22–30; A. Lappen, "The Working Woman Twenty-Five: America's Top Women Business Owners," *Working Woman* 17 (May 1992): 63–69.

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27. M. Dollinger, C. Enz, and C. Daily, "Impediments to Purchasing from Minority Small Businesses: A Transaction Cost Approach," *Journal of Purchasing and Materials Management* 27 (1991): 9–14; M. Dollinger and C. Enz, *Economic and Cultural Considerations in Overcoming Impediments to Minority Business Contracting: The Leadership Role of Regional Minority Purchasing Councils* (Indiana University Institute for Development Studies: Bloomington, IN, 1991); M. Dollinger and C. Daily, *Impediments to Minority Purchasing Programs: A Transaction Costs Perspective* (Center for Advanced Purchasing Studies: Arizona State University, Phoenix, AZ, 1989).

28. Shapero and Sokol, 1982.

29. H. Stevenson, M. Roberts, and H. Grousbeck, *New Business Ventures and the Entrepreneur* (Homewood, IL: Irwin, 1989).

30. Of course these are ideal cases that probably do not exist in reality—it is hard to imagine an entrepreneur who undertakes the creation of a new venture without regard for resources, and it is equally difficult to describe a managerial job without uncertainty. But we make the case for emphasis, not realism.

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32. Winter, 1988. Winter provides an example that some readers may relate to. A brain-damaged man may retain the ability to play golf and hit a one-iron a good distance and in the desired direction. This type of competency cannot be easily transferred by any known method of communication. However, if the damage is to the part of the brain that processes declarative information, the man might not recall where the ball landed or be able to keep track of his score.

33. Quoted in M. Ray and R. Myers, *Creativity in Business* (New York: Doubleday, 1989).

34. J. Kao, *Managing Creativity* (Englewood Cliffs, NJ: Prentice-Hall, 1991).

35. T. Amabile, *The Social Psychology of Creativity* (New York: Springer Verlag, 1983).

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39. J. Anderson, "Weirder Than Fiction: The Reality and Myths of Creativity," *Academy of Management Executive* 6 (1992): 40–47.

40. A. Koestler, *The Act of Creation* (London: Arkana, 1963).

41. Anderson, 1992.

42. J. Quinn, "Managing Innovation: Controlled Chaos," reprinted in *Entrepreneurship and Creativity at Work* (Cambridge, MA: Harvard Business Review, 1991), pp. 81–94. We will return to this subject in Chapter 13 when we discuss intrapreneurship.

43. One such simulation tries to elicit keywords from the user and then combines these words in random sequences to provoke new and creative concepts. See T. Easton, "*Think Thunder! And Unleash Your Creativity*," (Mission Hills, CA: R.K. West Consulting, 1989).

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46. J. Anderson, "Mind Mapping: A Tool for Creative Thinking," *Business Horizons*, January–February, 1993, pp. 41–46.

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5

WHARTON REPROGRAPHICS

Churn, Baby, Churn

IT'S A MESSY BUSINESS, this new economy. And despite what our leaders say, all the turmoil is actually good for us • *By Jerry Useem*

THERE ARE PEOPLE WHO ACTUALLY know how the modern economy works. It's just that nobody in government wants to talk to them.

Consider the story of Donald Hicks, a professor of political economy at the University of Texas. Contracted by the state to examine the past and future of Texas's manufacturing base, Hicks pored over 22 years of sales-tax returns—including those of defunct businesses, interred in a mausoleum-like archive—to trace individual companies as they made their way into and out of existence.

His most striking finding: the "half-life" of new businesses had been cut in half since 1970. That is, a group of companies founded in, say, 1985 took only half as long to have its ranks depleted by 50% as a group born in 1970 did. A process of attrition that used to take five years now took less than two.

More surprising still, the Texas city whose businesses had the shortest life expectancy—Austin—had the fastest-growing job base and the highest wages. The counterintuitive lesson: high business-mortality rates are good for economic health.

Actually, that makes sense. In the past two decades, a variety of factors have dramatically increased the velocity of the basic capitalist dynamic. The economies that succeed are those that quickly shift assets to their most productive uses through vigorous economic churning—through business start-ups *and* the failures that inevitably accompany them. This is what the Austrian economist Joseph Schumpeter famously termed "the perennial gale of creative destruction."

But what the Texas government really wanted to know was this: what would it take to create 3 million new jobs by the year 2020? Hicks's report offered this answer: the state's task was to produce not 3 million new jobs but *15 million* new ones, because by 2020, most of today's companies will have disappeared. Rather than considering jobs a fixed sum to be protected and augmented, he argued, the state should focus on encouraging that economic churning—on continually re-creating the state's economy. To promote long-term economic stability, paradoxically, the state would have to promote constant instability.

Presented with those messy and unsettling findings, what did the state of Texas do? It decided not to release the report.

(Continued)

PHOTOGRAPH: VITO ALUIA

The Entrepreneur as Protagonist

This tale captures perfectly a problem that is warping the debate about America's political economy. As Regina Tracy, executive director of the Research Institute for Small & Emerging Business, in Washington, D.C., explains it: "Legislators get incredibly nervous talking about creative destruction, about the churning process. They don't want to talk about it."

We shouldn't be surprised. First of all, the case for creative destruction can't be neatly wrapped up in a 15-second sound bite. Second, no politician with even a modicum of regard for his or her political future would stand before voters and advocate economic instability and destruction. And though there is plenty of lobbying pressure to prop up "yesterday's economy," Hicks points out, "there is no political constituency for the future, for the firms that aren't yet born."

THE CITY whose businesses died most quickly had the fastest-growing job base and the highest wages. The lesson: high business-death rates are good for economic health.

The sad result is that our politicians frame debates and create public policy using a model of an economy that no longer exists. Or as Tracy puts it, a model that "causes us to ask the wrong questions."

For instance, most communities' idea of economic development is to lure outside companies through tax abatements and other incentives. Yet from the standpoint of national prosperity, that's silly. It is, of course, a zero-sum affair: one community's gain is another's loss. Rather than fostering innovation and *new* wealth—by, say, establishing local business incubators, which research has shown are more effective on a cost-per-job-generated basis than business-attraction schemes are—communities grapple over existing wealth as if it were a fixed quantity.

The problem is compounded by the fact that the reigning economic orthodoxy—a neoclassical model known as general equilibrium theory—all but denies the existence of creative destruction. Constructed in the late 19th century and since embellished by generations of economists, equilibrium theory concerns itself mainly with how existing resources are optimized: how supply-and-demand curves determine input, output, prices, and so on. As its name suggests, the theory takes equilibrium to be the normal state of an economy, assuming that market disequilibriums are quickly eliminated through price adjustments. Its mathematically elegant universe cannot cope with entrepreneurs, relegating them to the catchall domain of "external forces," along with war and weather.

Early in this century, Joseph Schumpeter broke radically with his profession by suggesting that general equilibrium theory missed the point. It ignored what he considered capitalism's single most important aspect: innovation, which drives economic changes. "The essential point to grasp," he wrote, with a hint of contempt for his peers and their misleading mechanical metaphors, "is that in dealing with capitalism, we are dealing with an evolutionary process."

Disequilibriums were not passing anomalies, Schumpeter asserted, but rather the very crux of the capitalist process: an entrepreneurial business—Microsoft, Nucor, Southwest Airlines—enters a market with a technological or organizational innovation, destroys the oligopolistic equilibrium, and siphons off wealth and jobs from the hegemonic giants. In that model of constant disequilibrium, the entrepreneur is the central economic protagonist, the fount of economic progress and quality-of-life improvements.

Two Models, One Economy

Schumpeter's perspective did not fare well, mostly because it did not lend itself easily to mathematical expression. Strangely, he was remembered more for a fantastically incorrect prediction—that huge corporations would come to dominate the U.S. economy—than for his central thesis of creative destruction. Today a small tribe of maverick economists—particularly Paul Romer of Stanford University—has resuscitated Schumpeter's vision, contending that it offers an altogether more accurate description of how today's economy actually works. Yet, as Richard Nelson of Columbia University remarks, "there is scarcely a crowd of us."

Ongoing resistance to a more dynamic conception of capitalism has unfortunate policy consequences. For example, there's great self-congratulation in America about "our efficient financial markets," says Bruce Kirchhoff of the New Jersey Institute of Technology. But "from the small company's point of view," he says, "they're anything but efficient. The transaction costs are huge. The deal flow is horrible." If there were a more thorough comprehension of the macroeconomics of small enterprises, Kirchhoff argues, the government wouldn't have waited so long to allow a public market for entrepreneurs looking for equity capital, which the Securities and Exchange Commission only recently OK'd.

Or take the government's data-gathering efforts. As Kirchhoff points out, they're designed under the faulty notion that an insignifi-

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WHARTON REPROGRAPHICS

Archives

The New York Times ON THE WEB

January 18, 1998, Sunday
Section: Money and Business/Financial Desk

EARNING IT; Good Product. Sound Plans. No Sure Thing.

By BARNABY J. FEDER

AMERICA'S love of innovation runs deep. More than a century ago, Ralph Waldo Emerson earnestly proclaimed that anyone who invented a better mousetrap would find the world beating a path to his door.

For a dose of reality though, consider the tale of Doumar Products Inc. and un-du, its adhesive neutralizer.

There is no question that un-du is the sticker world's version of a better mousetrap. The product can not only remove oil-based labels, stickers, price tags, bumper stickers, masking tape and gum, but it can also make a sealed envelope temporarily transparent so you can confirm whether you really signed that check.

Buyers who managed to find Doumar's low-budget booth amid more than 2,000 others at the International Housewares Show here last week broke into smiles as Mark Foley, the company's marketing director, used un-du to separate Duct Tape from single-ply toilet paper without damaging either. The delight became amazement when Mr. Foley then demonstrated that after allowing a few seconds for the un-du to evaporate, the tape was once again sticky.

"Everyone's awed," said Carlos Sanginesi, owner of Golden Oil International, a wood-polish maker. He had a difficult time competing for attention at his adjacent booth.

Still, after two years of market tests, trade shows, appearances on QVC's home shopping programs and repeated rounds of money raising, Doumar is only now creeping toward commercial success. There have been brushes with financial collapse and fears that larger competitors were about to introduce copycat products, which would have forced Doumar into legal battles it could ill afford.

"We've got a great product, lines of credit from the bank, manufacturing capacity and marketing reps -- and we're struggling," said Gary Reichling, Doumar's chief executive and president. "I don't see how entrepreneurs operating out of a garage without such a great product do it."

How entrepreneurship works -- or flops -- has never been a more crucial economic question. Downsizing has created legions of experienced executives and workers who are looking for employment and opportunity in new ventures. Small businesses are often cited as the major job creators in the economy, but it is new small businesses that account for most of the gains, according to Robert Premus, a former economist for the Joint Economic Committee of Congress who recently set up an entrepreneurial studies program at Wright State University in Dayton, Ohio.

And innovation, while clearly the riskiest form of entrepreneurship, may also be the key to long-term economic growth.

"There are 600,000 to 700,000 new businesses created each year, and an educated guess would be that well under 20 percent have a new product or something distinctive," said Paul Reynolds, a professor at Babson College in Wellesley, Mass., who is coordinator for a consortium of 27 universities, foundations and Government agencies interested in research on entrepreneurs.

"Each invention may only affect daily life a little," he said, "but these things have a cumulative impact that sets the United States apart from other countries."

As Wright State recognized, no self-respecting business school can today ignore the intense interest of business students in such activity. Harvard Business School says that in a recent survey, more than half of its 24,000 graduates classified themselves as entrepreneurs.

And the enthusiasm is not limited to America.

"It's a foregone conclusion worldwide now that if you want your economy to grow, you have to encourage entrepreneurship," said Jerry White, director of the Caruth Institute of Entrepreneurship at Southern Methodist University in Dallas.

One of Professor White's favorite role models for would-be entrepreneurs is his 36-year-old former student, Mr. Reichling, who grew up on a South Dakota dairy farm and studied accounting at his state university. Mr. Reichling and a friend moved to Dallas 10 years ago with $800 between them. They had so little experience with big cities that they did not realize they needed jobs before landlords would rent to them. They slept in their Chevette the first week.

Mr. Reichling soon got work as a $7-an-hour clerk filing waste reports for Dixico, a packaging company that made snack-food bags for companies like

Frito-Lay and Keebler. By 1993, he had become a certified public accountant, earned an M.B.A. at Southern Methodist, risen to chief financial officer of Dixico, married and bought a modest home in the suburb of Mesquite.

That year, Bell Packaging, Dixico's Indiana-based parent, decided to sell the company. Mr. Reichling was offered a substantial raise, a better title and the use of a Lincoln Town Car. Instead, he and a partner engineered a risky, $2 million leveraged buyout of a Dixico subsidiary that had piled up $600,000 in losses the previous nine months.

Mr. Reichling invested everything he owned, outside of a small bit of equity in his home. But the gamble paid off when he and his partner quickly restored the company to profitability. They sold it to Huntsman Chemical in 1995 for an undisclosed sum, which, Mr. Reichling says, "left me a millionaire."

Professor White calls the turnaround "an expert piece of entrepreneurship" and uses it as a case study.

But that episode was just a warm-up for the challenge of starting Doumar. The fledgling company was created in November 1995 by two Minnesotans -- Mark Foley, a former salesman of liquor, apparel, chocolate and medical equipment who was looking for a new line of work, and Douglas Farley, a real estate agent. They were dazzled by the response among Minneapolis secretaries and others for whom Mr. Foley had demonstrated un-du after he had been sent samples by its inventor, his father, Charles Foley.

With just $6,000 in capital -- and Mark Foley went into debt, at that, to come up with his share -- Doumar acquired the rights to distribute un-du for two years. But the new company clearly needed more money to grow. That was when Warren Garden, a lawyer who had helped the partners incorporate, introduced them to Mr. Reichling, who had been investing some of his new wealth in a variety of fledgling businesses -- acting, in entrepreneurial argot, as a financial "angel."

ANGELS are the black hole of entrepreneurship research. No one knows how much capital such private investors put up annually, but the consensus is that it is far in excess of the contribution of the $4[illegible].5 billion professional venture capital industry. The angels' money, contacts and management advice come at the crucial stage when businesses are too new to get the attention of the venture capital firms, according to Charles Heller, director of the Dingman Center for Entrepreneurship at the University of Maryland.

Mr. Reichling loved un-du but was appalled by the holes in Doumar's business plan. He invested $75,000 in the spring of 1996 on the understanding that Doumar would negotiate permanent distribution rights. He also wanted it to take over manufacturing and control of the patent from Un-du Inc., a venture that Charles Foley had cobbled together with acquaintances in North Carolina in the hope that they would commercialize un-du.

That year was consumed in raising new money, negotiating the Un-du Inc. buyout terms, designing more sophisticated packaging, building a network of sales representatives and courting buyers at shows. There were highs, like winning "best new product" at the Business Product Industry Association show here in June 1996. Mr. Reichling completed the transition from angel to full-time chief executive in September, partly because he felt he owed it to friends and relatives who had invested at his suggestion.

In November, Reading China and Glass, a kitchen and dining room superstore chain based in Newark, Del., placed the first major retail order. Still, the year ended with just $38,000 in revenue and $400,000 in expenses.

"We went through much more money than we thought we would," Mr. Reichling said.

Last year, the tightrope moved much higher. Revenue reached about $800,000, thanks to growing retail orders and a series of appearances on QVC -- including a 10-minute segment last month featuring Mark Foley that resulted in the sale of 30,000 bottles. But the company also invested heavily, moving manufacturing to Texas, expanding production capacity, installing computer and phone systems and hiring more employees.

There were times when the company tottered perilously. In the course of the move, thousands of poorly capped bottles of un-du evaporated. Everyone pitched in to refill them by hand -- and had the blisters to prove it. Local investors and relatives, including Mr. Reichling's parents, both in their 80's, were sometimes recruited as weekend or evening labor to help meet rush orders.

To stay afloat, Doumar's executives twice took pay cuts. Even so, Mr. Reichling had to set up a compensation pecking order. The first to be paid were vendors and hourly workers; then Mr. Foley, who is divorced but has child support payments to make and almost no savings; then Brendan Bauer, the director of operations, whose wife works as a teacher, and finally Mr. Reichling. Pay levels were restored last fall, but December was the first month when everyone was paid on schedule.

Doumar could have made life easier for itself by accepting more money from angels, which was readily available. But Mr. Reichling was reluctant to further dilute the holdings of the early investors like Mr. Foley.

Mr. Reichling is currently the largest shareholder, with more than 30 percent of the company.

Mr. Foley said he was down to 12 percent but, he added, "I know the sacrifices will pay off down the road."

But new bumps always seem to emerge. For instance, when Doumar finally began attracting orders last year from a few nationwide retailers like Walgreens and Staples, it discovered that they routinely demanded 90 days to pay. That squeezes cash reserves at Doumar, which must pay its suppliers up to two months sooner.

Perhaps most discouraging, many retailers who love un-du tell Doumar that they will not place orders until the company has the money to advertise it widely. Others flatly refuse to order from a company with only one product.

THE costs of any wrong move are certain to grow because, as last week's housewares show underscored, potentially tough competitors have started to emerge.

The biggest concern has been the Magic American Corporation, a Cleveland-based maker of specialty cleaners with $30 million in annual revenues and well-established distribution capacity. Six months ago, Magic American served notice that it was paying attention, instigating an investigation by the Consumer Product Safety Commission of Doumar's labeling of the flammable product.

Mr. Reichling said the Federal agency ended up concluding that there was no problem, but the episode was an unexpected, nerve-fraying diversion. Then, buyers told Doumar late last year that Magic American was hinting that it would soon have a cut-price version of un-du under its popular GooGone brand.

At Magic American's booth at the housewares show, Doumar executives encountered the new GooGone "Sticker Lifter" for the first time. They were dismayed that the package resembled un-du's, but the products differ enough that it was difficult to see what Doumar could do about it.

GooGone clearly uses a different, slower-acting solvent that does not preserve the adhesive on the tape or label being removed. Nor does it leave all surfaces stain-free, as un-do does. It comes with a plastic lifting tool, but unlike the one covered by Doumar's patent, Magic American's tool is not attached to the bottle.

"We think the separate tool and the slower action give us more flexibility," said Alan Zeilinger, Magic American's president, who diplomatically praised Doumar for "expanding the category."

The arrival of competitors steps up the pressure on Doumar to quickly take the un-du name national -- and even international -- to help establish it as the clear leader in adhesive removers. If un-du can become a strong brand name, Doumar has a much better chance of adding other products, including stain and odor removers, to its business, even it they are not unique. Only then would it become an attractive supplier for giants like Wal-Mart and Home Depot.

Expanding too rapidly has, of course, led to spectacular debacles, even for famous entrepreneurs. Raising capital without giving away control and most of the profits to investors is one challenge. Attracting the right managers is even tougher, according to those who have studied the field.

But the more frequent, if less visible, error is expanding too slowly, according to Lloyd E. Shefsky, a lawyer who represented entrepreneurs for 25 years. Mr. Shefsky wrote "Entrepreneurs Are Made Not Born" (McGraw-Hill, 1994) and now teaches at Northwestern University's Kellogg School of Management.

"Survival without huge success is the most common outcome," he said.

The signs are mounting that the issue for un-du is shifting from whether it will survive to how big a success it will be.

"It's been flying off the shelves," said Kimberly Nathan, the buyer for Reading China who gave Doumar its first big break.

But Mr. Reichling remains cautious.

"Every step," he said, "has been tougher than we expected."

Organizations mentioned in this article:
Doumar Products Inc

Related Terms:
Housewares; Inventions and Patents; Marketing and Merchandising; International Housewares Show; Small Business; Company and Organization Profiles; Un-Du (Adhesive Neutralizer); Adhesives

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7 WHARTON REPROGRAPHICS

Howard Head and Prince Manufacturing, Inc.

"We can own the tennis world," Howard Head told Prince's president, Jack Murray, and Jim Baugh, director of marketing, in spring 1982. Having already achieved success with his oversized (110 square-inch) Prince Classic tennis racket, Head now envisioned an empire greater than any the industry had ever seen. A small company called Kennex had just approached Head to ask if Prince would consider promoting their rackets. Although Head found the Kennex racket to be an "excellent and aesthetically beautiful product," he declined their offer:

> I was afraid to accept Kennex's offer for fear that word would get out that I was promoting a mid-size racket that wasn't mine. Unfortunately, Prince company management didn't want to listen to my ideas for an expanded line of Prince tennis rackets. I had written about 80 pages of company objectives which laid it all out very clearly. However, Jim was afraid that promotion plans of the 110 would falter—that a leak concerning the possible consideration of any other size would be detrimental to Prince's marketing plans. That was why he thought we should tell Kennex "no." I, on the other hand, declined their offer mainly because I had no interest in marketing any racket other than one designed by, built by, and carrying the name of Prince.

Mr. Head's company objectives included plans for aggressive experimentation with a series of 93- and 100-square-inch rackets to go along with the 110 square-inch Prince Classic (the standard racket size was 70 square inches). Head felt sure that there was a market for these mid-size versions, and he didn't want to miss out on an obvious opportunity, but he thought his own company was getting in the way.

Head also felt that Prince's officers were being overcautious about his plans for expanding the company's telephone-answering force to include computerized information on every dealer and for other improvements in public relations and customer service. He wanted to fine-tune Prince to the very limits, but felt his own people were stopping him.

Research Associate Susan S. Harmeling prepared this case under the supervision of Professor Howard H. Stevenson, as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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In 1969, Head had sold Head Ski Company and its name to AMF, Inc. for $16 million, realizing more than $4 million personally. The success had not come without its strains. "If a logo had to be designed, I did it. If a selling tour had to be made, I did it. If the factory floor had to be swept, I did it. You can't run a frantically expanding business that way." At the same time, this business experience proved to be a valuable asset as he set out a few years later to create yet another superior sporting implement. Head's now famous oversized racket had taken Prince from $1 million to $35 million sales in just five years, and 1982 projections were for gross sales of close to $60 million. (See **Exhibit 1** for Prince financial summary.)

But now, at age 68, did Mr. Head really want to invest the time and energy in this young company to take it to the heights he knew were possible? Or, should he, as he put it, finally "give up the thing world and move into the people world," breaking his addiction to the "powerful drug of creativity?"

Prince Company History

Howard Head initially made himself known in recreational circles when he designed the first metal ski. An aircraft engineer during World War II, he had become an expert on the various uses of aluminum. Using this knowledge, he produced a metal "sandwich" ski in 1950, which by the 1960s had all but crushed its wooden competitors. Head recalled:

> This success had nothing to do with promotion, but stemmed from the fact that the product was almost magically easier to use, making the sport accessible to millions of skiers. Heretofore the extreme difficulty of skiing on the laminated hickory skis of the prior era had limited the sport to the hearty elite. The Head ski was later credited as a key factor in the growth of the sport from perhaps a total of 10,000 U.S. skiers in the 1940s to millions in the 1960s.

Head retired in 1970, a year after selling Head Ski Company to AMF, but his retirement didn't last very long:

> I put in a court and decided to take up tennis, but I found that it wasn't as easy as I thought. Even after I took a lot of lessons, I still had trouble. . . .
>
> My tennis pro must have gotten tired of trying to hit against me, because in the summer of 1971 he suggested that I get a tennis ball machine to practice against. He put me in touch with a little company called Prince up in Princeton, New Jersey. I called them up and told them I wanted to buy one of their machines. They said it would cost $285.00. I said, "All right, you put a machine on the truck today and I'll put a check in the mail today." That's the way we got started.
>
> They sent a machine down and I recognized almost immediately that it was a carefully thought-through and well-designed piece of equipment, but about as crude as the first Head ski. Everything went wrong with it: the ball would jam, the ball would glunk, the ball would drop. *Everything* went wrong—I spoke with them over the phone and within two months I joined the company as chairman

> of the board and de facto chief engineer. I had gotten into a thing I loved, which was debugging and perfecting a piece of equipment. A year and a half later, Prince had captured half the ball machine business.

In October 1971, after Head had successfully "debugged" the Prince ball machine, he bought 27% of the company for $27,000. (See **Exhibit 2** for 1971 balance sheet.) Head explained the company's approach:

> Our business was based on the ultrasimple process of someone calling up and saying, "Can I buy a machine?" and we would say, "Sure, put a check in the mail and when it hits our mailbox, we will ship you a machine." We basically had no distributors and no advertising. We just waited for checks and then shipped the machines, so we could market the machines at low cost and make a whopping profit.
>
> That ball machine company taught me how to run a profitable business because it was so simple. Furthermore, I was just sitting down in Baltimore smiling and saying, "Well done, fellows; it's great to see this money piling up. . . ."

Mal Bash, who was hired in 1974 as quality control manager and later became chief engineer and head of manufacturing, recalled Head's early role at Prince:

> He came up from Baltimore at least once a month and spent a day or two. He was always asking us to try different things. He would never accept a "no." If I said I couldn't do something, he'd ask "why?" I'd say it wouldn't work and he'd ask, "why?" again. I found it quite challenging, and it often led to accomplishing things I didn't think could be accomplished.

Bash described how Head averted a crisis with a more advanced model of the ball machine whose design created major jamming problems. The company had presold the machines and was now ready to go into production before the jamming problem was fixed:

> There was a little part of the machine called the spring pin which kept more than one ball at a time from feeding into the machine. One of Howard's suggestions was to take a couple of spring pins and bolt them into the top of the rotor. He thought it would stir everything up enough to prevent the jamming. I didn't think it would work, but Howard insisted that it would. Sure enough, it solved the problem and we went into production the next day.

Head explained that his success was the result of an obsession with performance:

> Sports-minded people will simply gravitate toward a product that works better. Give them a better piece of fly casting equipment and they will buy that fishing rod. Give them a better ski-down-the-hill design, and they will buy that ski. A better tennis ball hitting implement, and they'll buy that racket when it becomes available. It's performance that counts, and word of mouth that sells the product. No amount of promotion or advertising or other pizazz will alter this fundamental truth.

Tennis: The Booming Industry

During the late 1960s and the early 1970s, tennis moved from exclusive circles into the mass market. Gone were the days when the sport was synonymous with country clubs, white garb, strawberries and champagne; courts were springing up everywhere, amateur athletes from all walks of life were heading out in droves with rackets in hand, and the possibilities for innovation were endless. Courts were being built in record numbers, especially indoor courts made to accommodate the serious, year-round player. By 1966, *Newsweek* estimated that there were 8.5 million tennis players in the United States; six years later, there were an estimated 100,000 U.S. courts in all and 5,000 new ones being added each year.

As the trend continued into the mid-1970s, it looked as though no end was in sight. A 1974 *Sports Illustrated* article noted:

> Twenty-one million Americans, drawn like fruit flies to a vast ripening vine, now play tennis at one level of incompetence or another. This national mania is not without value. Golf courses are no longer as crowded, for one thing, and there aren't as many drunks driving home after a match. Unlike golf, tennis has no par to alert man to his inferiority. He can reach new depths without the need of a 19th-hole elixir to ease the pain. A swig of Gatorade will usually do it.

Meanwhile, a technological revolution was taking place as a 1976 *Time* magazine article called "Those Super Rackets" reported:

> The names—YFG-50, Boron XT, and the XRC—conjure up visions of supersonic test planes or supersonic racing cars. But the sobriquets belong to tennis rackets, crafted in strange shapes of exotic materials.
>
> In search of a bigger "sweet spot," more power and control, manufacturers have imbedded boron fibers in an epoxy matrix, reinforced nylon throat pieces with quartz, turned to builders of nuclear reactors for ultrasonic welding techniques, and altered the spacing of strings. The physics laboratories at Princeton where Albert Einstein once worked have been used to experiment with variants of torque and longitudinal flex.

Design and Patent

It was in this context that Head began his design experiments. He arrived at the ultimate design of his oversized racket after a period of persistent trial and error:

> I was simply looking for a racket that would be more stable to an off-center hit. I tried to fix it by putting weights on the rim of the frame. It didn't work. Then, I had a genuine breakthrough. I realized that I shouldn't add any weight, but should spread the weight out. I knew this would increase the inertia and therefore, the stability of the racket. That was my invention.

This was not, however, his first shot at racket design, as *Fortune* noted:

> Head had fooled with tennis rackets before. While still with the Head Company, he had taken to shaving the wooden rims of cheap Korean imports and tacking on aluminum siding in an unsuccessful attempt to strengthen them. By 1974, he was frustrated enough with his own game to give the racket another try. It was either that or take up golf, and Head hated golf.

Although the Prince racket was later expanded into various materials (his graphite version was the first of its kind), its new shape and dimensions represented engineering breakthroughs, though the result resembled a snowshoe more than a tennis racket. By making the racket only two inches wider, with a three-inch longer hitting surface in the throat, Head had increased the torsional stability of the racket—and the size of its "sweet spot"—by an extraordinary degree. The earlier 70-square-inch racket had a mean way of twisting in the hand to an off-center hit. As Head described it, "Suddenly, a sport which had a somewhat limited following because of technical difficulty, became accessible to a much broader range of players. The market expanded and the sport was just plain more fun. The parallels with the metal ski were obvious." But while the new racket worked very well, its appearance, as one tennis buff wrote, sparked a very important question: "Is it legal?"

It was legal, but the U.S. Patent Office initially said that it wasn't a novel enough idea to merit a coveted patent. It was not enough to assert that this racket was better than the old-fashioned kind, "how much better?" had to be demonstrated. After working with Princeton consulting engineer Ken Wright, Head determined that the racket's "coefficient of restitution" could supply the quantifying data. (The coefficient of restitution at any spot on the racket head was the ratio between the velocity of the incoming ball and the velocity of the ball leaving the strings.)

Using high-speed photography, he measured the size of where the coefficients were 0.3 and 0.4 and 0.5 on his new Prince racket as compared with these same zones on conventional rackets and found that in every case, the Prince zones were three to four times bigger. He found that one zone of 0.6 on his new racket didn't exist on an ordinary racket. That was the crucial point. There was now measurable proof that at least by one criterion the Prince racket produced more than three times improved performance with only a 60% increase in area. (See **Exhibit 4**.)

The patent was finally issued to Head in May 1976; it was good for 17 years, covered a wide range of racket shapes and sizes, and was, according to a 1977 *Popular Science* article, "the broadest tennis racket patent ever granted." Where Prince was not able to achieve patent protection—for example, in Germany and Japan—other companies began to produce rackets of the Classic's size and shape. Prince's lawyers were, however, able to secure judgments that prevented those adaptations from being sold in the United States, causing one competitor to muse, "Howard's brilliance really shone at its brightest when he got that patent. It's like getting a patent on a size nine shoe."

Meanwhile, with good feedback from experimental rackets in the field, and with patent in sight, the decision was made to move Prince full speed ahead into the racket business, as the ball machine market reached saturation point.

Product Development

While Head was conducting his experiments, the tennis industry entered a period of turmoil. Just as manufacturers geared up for the expanding demand with a round of technological innovation, the popularity of the sport began to decline sharply. Racket sales dropped precipitously from 8.3 million in 1977 to 4.9 million the next year, and continued to drift downward to 3.2 million in 1981. (See **Exhibit 3.**) Prince came on the scene in the midst of this turmoil, as noted in a 1982 *Fortune* article:

> The simultaneous collapse of the market and the fact that the oversize Prince was just beginning its roll, left the giants of the industry searching for defensive strategies. The small, tightly strung world of tennis-racket makers is haunted by a paralyzing question: how to compete with that peculiar, triumphant slammer of the fuzzy yellow ball, the oversized Prince racket. Invented just six years ago by technological iconoclast Howard Head and at first considered nothing more than an amusing novelty, the Prince last year grabbed the commanding share of the high-priced market.
>
> Prince's share of the market for upper-bracket rackets—those selling for $50 and up—exploded from 8.5% in 1979 to 30.7% in 1981 . . . AMF Head's share, meanwhile, slipped from 31.6% to 26.3%, while Wilson's fell like a dropshot, from 19.2% to 10.7%. This left industry strongmen trying to persuade customers to trade up to more expensive "weapons," as manufacturers call rackets.

Not everyone was convinced that Prince was the ultimate "weapon." While many players swore by their new rackets, most experts during this peak period of experimentation agreed with renowned California teacher Vic Braden, who insisted:

> I don't care what kind of racket it is. I once saw Bobby Riggs beat a guy with a broom . . . the only difference the Prince racket makes is that now when you serve, you will hit both your legs rather than just one.

Despite Prince's impressive early growth, Howard Head consistently emphasized that at no time did he stress a growth imperative:

> I will never try to make my company grow for growth's sake, but I have people who do—marketing people. My compulsion is simply to make the best sliding-down-the-hill implement for skiers and the best tennis ball-hitting implement for tennis players, and in both sports, a different piece of equipment fine tuned to each category of athlete.

At Prince, Head did encounter problems in achieving the latter aim—of providing a racket for players in all segments of the market. For example, Beverly Hills tennis shop salesmen reported in November 1976 that most Prince sales were made to men over 40 "searching for a tennis fountain of youth." A young tournament player summed it up by saying, "When somebody shows up with a fancy stick, some other kid will say, 'Oh you need a bionic racket, huh?' Nobody wants to look like a sissy."

Head recalled:

> In 1976, we went into production. In that year, we sold 70,000 rackets, in 1977 we sold 160,000 rackets. I expected to be going up to 250,000 and then 400,000 in the years following, but suddenly there was a leveling off.
>
> Sitting afar, I had the perspective and the vision to know that the problem with this racket was that it was being swallowed up by lady club players, elderly men and beginners, but it was not being accepted by professionals, young college players or A players. It finally sank into me, and more quickly than in the case of Head Skis, that these guys had a valid complaint that the rackets were too spongy, strung too softly, and had a frame that was too flexible for the hard hitting young players.

Mal Bash elaborated:

> I can remember in early 1976 that we started to get complaints from our customers. They said that the racket didn't play well, that it vibrated badly and that it made noises when the ball was hit. . . The Prince needed to be strung 15 to 20 pounds tighter than a conventional racket. So we [Howard and I] wrote and rewrote extensive stringing instructions in an attempt to educate the consumer on how the racket should be strung.
>
> Then people started complaining that the racket couldn't be strung on certain machines. Howard said that we had to solve this problem, and I said that I didn't know enough about all of the different kinds of machines. He told me to go out and buy them all, and I did just that. After stringing the rackets on every single machine on the market, we modified our stringing instructions accordingly.

This still was not enough to attract the segment of the market that was missing, as Head described:

> About 1977, I felt this slowdown taking place and I decided that we must go on a search for a new racket, a stiffer racket with a stiffer frame and a frame that could be strung much tighter. I approached that in two ways. We wanted the tubular aluminum frame racket which later became the Prince Pro, and we wanted the graphite fiber racket which later became the Prince Graphite.

With the new designs and new materials came new manufacturing challenges. This was an area where Head felt he learned a great deal from his ski company experience.

Manufacturing

At Head Ski Company, Howard Head had learned a valuable lesson in manufacturing strategy. The time and energy wasted on problems related to manufacturing was said to be one of the main reasons that he, so accustomed to being at the front of the pack, was kept from capitalizing on a major technological breakthrough in ski design. Head noted:

> If we had not been doing our own manufacturing, we could have ordered this company and that company to do research and switch us over into fiberglass. The fact is that we were unable to do that fast enough. I think I knew that, since I had this compulsion to direct everything and do everything myself, that I would not succeed in that conversion.

Thus he explained:

> At Prince, we do not waste our energies on the frustration of manufacturing. At Head, we ate ourselves up in the manufacturing process I had invented, and we remained total amateurs at it. In the case of Prince, our manufacturing is done exclusively by pros responsible for their own work.

At the beginning, these "pros" were the Maark Corporation, no strangers to Mr. Head. Late in the 1960s during his final days at the Head Ski Company, Howard Head became interested in tennis and began selling conventional-sized aluminum rackets under the Head label. He had the rackets made to specification by Maark, an aluminum designer and fabricator near Princeton, New Jersey. Head again turned to his friends at Maark to manufacture the Prince Classic.

Head's previous relationship with Maark proved invaluable. As he once said, he would have been too tired to start the project from scratch had he not known someone who could make that first batch of rackets for him. After the idea of the Prince racket was presented to Prince's board of directors in fall 1974, the decision was made to have Maark produce some test rackets by the following year. When asked what kind of expenditure that involved, Head explained the nature of this "strategic alliance":

> Maark was smart. They wouldn't charge me a cent for the first experimental racket, nor for the next six, nor for the final 100 experimental rackets that we needed for confirmation. They were putting me under a moral obligation so that if this racket worked, they were going to get the business.
>
> They knew that I was trustworthy, and I think they thought from my history that, goofy as this thing looked, I must have had a good reason for pursuing it. My track record with Head skis was a good one.
>
> Maark's initial pricing policy paid off well. They developed a great relationship with us. They made the Classic from an aluminum extrusion of their own design. It was a good serviceable frame and reached wide acceptance with the beginner and the average player. However, this is the racket that turned out to be too flexible and was unable to be strung tightly enough to make it acceptable to the good player.

In 1978, aware of the flattening in sales and the need for a stiffer racket that would withstand tighter stringing, Mal Bash went to Maark and asked them to make a tubular racket as opposed to their extruded frame. They rejected this design. Bash became indignant, as he explained:

> I walked out of the meeting at that point. I was really feeling like I was-going down the wrong track. Here were two guys who had made and designed the first

> really successful aluminum racket (the Head Pro) and both of these guys had previously come from Alcoa. They had a lot of knowledge about aluminum, but they were just too old and tired to listen.

Head elaborated:

> Maark was getting reasonably fat, and they were enjoying our relationship with them. Then we came to them with a change which we knew was the future of the tennis racket world. This is like it was with Head back in 1965 when I knew in my gut that the wave of the future was going to be the fiberglass ski. But we were unable to make the leap to a totally new technology. This is what was happening with Maark.

Convinced they needed a tubular aluminum frame, Bash contacted 15 to 20 aluminum fabricators. They all said they were not interested because the new design would be too prone to stress corrosion, a propensity toward internal cracking. Bash then tried Alcoa itself, but they wouldn't do it. So he reached out overseas and found the largest tennis racket manufacturer in the world in Taiwan, Kunnan Lo, who produced beautifully crafted rackets but only in cheap soft alloys. They knew nothing of the high-tempered alloy that Prince would need for its new tubular frame. Head recalled:

> Almost at wit's end, Bash thought of an extremely imaginative solution. He decided that what we had to do was to buy high-strength aluminum tubing from Alcoa, who would draw it for us, put it in an intermediate temper condition, and ship it over to Taiwan. We would then have Kunnan Lo take over to form the racket for us, put on the handle, anodize it, polish it, put on all the cosmetics, and ship it back to America where we would sell them. The best thing is that we made Kunnan Lo responsible for working its way successfully through the stress corrosion problem so we didn't have to worry about it. We didn't go to Taiwan because we could get rackets cheaper there; we went to Taiwan because the work ethic was so strong. I still remember watching them in that plant—they were dedicated to their work the way earlier American craftsmen were. Furthermore, they demonstrated an entrepreneurial capacity to work their way successfully through all problems.

Howard Head and Mal Bash breathed a gigantic sigh of relief when their relationship with Kunnan Lo was firmly established and they could get an unlimited supply of rackets from him. The Maark association continued out of an old loyalty, but it was no longer essential to the survival of Prince, and eventually broke down altogether.

With the supply problems of the tubular aluminum alloy for the Prince Pro out of the way, Prince turned its attention to the possibility of a graphite racket, which in some respects would outperform even the Pro in stiffness and resilience. They got the first rackets produced by a large American company. The racket was immediately successful; however, the supplier tried to hold Prince up with an arbitrary 50% price increase. Mal Bash solved the problem by withdrawing all the tooling from the company and trucking it down the road to another outfit called Grafalloy, who, even though their experience had been solely in graphite golf club shafts, were willing to take on tennis-racket design. The transition was successful.

In 1980, with the successful production of the superior Pro and Graphite models, Head was finally able to attract the kind of young professional and college players for whom he had designed this new product. This end was perhaps best demonstrated by the success of Pam Shriver who, with Prince Pro in hand, became the youngest player ever to get to the finals of the U.S. Open, beating Martina Navratilova along the way. The Prince Graphite was now enjoying a strong position in the market, boosting sales out of the previous slump.

Marketing

By 1980, the Pro and the Graphite were selling like hotcakes, adding to the Classic's steady share. Head was now dreaming of even greater market penetration and hoping that every tennis player in the world would soon be using a Prince. Further growth seemed inevitable, prompting Head to envision an expanded line of new rackets in an assortment of different sizes, shapes and colors designed to cater to players in every category. His main obstacle in achieving this goal seemed to come from within his own company:

> It was late in the fall of 1980 that my president, Jack Murray, a superlative administrator, organizer, leader, and motivator, said to me, "Howard, you ought to look through the profit plan." I said all right and I looked at it. I said, "Tell me what it means, give me the gist of it, and what is our sales increase projected for next year?" "Howard, we are projecting a 25% sales increase," he said, and I said, "Say that again!" He said, "You know, Howard, I am responsible for the company and I am working for you and I don't want to overpromise you. I am willing to project a 25% sales increase, and I'm sure we may do even better."
>
> I said, "I don't think I'm hearing you right. We grew 100% this year, didn't we?" He said, "Yes, but Howard, I don't want to promise you too much." Honest to God, my head started swimming. I told him that we were going to project a continuation of the 100% growth and that I would be responsible for it. That's how the thing went. Where would we have gotten the product to sell if I hadn't pressed the issue?

Head admitted that he did not like the word "marketing," and firmly believed that "word of mouth was always the primary salesman." When asked about the marketing department of his company, he responded:

> It is not my favorite area just because of the kind of thinking they do. They are much more timid than I would be if I were in the marketing department. If I felt that we could make a better tennis ball hitting implement for a wider number of players, I would not be worried about the fact that the image of Prince is a 110 size racket. I would make the better implement first and worry about the marketing effect later. I don't like the word "marketing," but I do like products.

His ongoing obsession with simplicity and with the efficient delivery of product to consumers was also evident in his attitude toward distributors and sales representatives:

> Past experience led us to conclude that marketing through distributors was an error and that we should standardize on shipment through the home office in Princeton.
>
> The country was divided quite early into about eight territories with a sales rep from each area in charge. Some of these were from big organizations and some were individual reps, but this is not an area in which I have been strongly interested. It has remained my conviction that the product either sells itself or it doesn't.

Finance and Organization

Prince had no outside financing and there were no outside investors; it was financed solely out of earnings, even with the stupendous growth. After Head's initial purchase of stock, no additional capital was raised. Eventually, he bought out most of the original stockholders who co-founded the company and, at one point, he wound up with about 80%. This later diminished to 67%, due to stock bonuses that he gave to employees. "I totally owned the company in a sense," he said. "There were no outside stockholders, and no board of directors except in an advisory way."

Although Prince's finance and manufacturing had improved dramatically over the years, delegation and management continued to be a burden for Head. He described the classic problems of the entrepreneur when he recalled the Head Ski Company:

> I think this is typical of the kind of business that is started solely from an entrepreneurial product basis, by someone with no interest or skills in management or business. Such an entrepreneur never stops to plan. The consuming interest is to build something new and to gain acceptance. The entrepreneur has to pick up the rudiments of finance and organizational practices as he goes along. This type of business is fantastically efficient as long as it remains at a certain level. One man can make all of the important decisions.
>
> At Head Ski Company, to put it succinctly, what was efficient at the $500,000 level was increasingly inefficient as we reached $1 million, then $2 million in sales. One man just couldn't handle it. It was like trying to run an army with only a general and some sergeants. There were just no officers, to say nothing of an orderly chain of command.
>
> With Prince, fates have decreed that I live in Baltimore while the company is up in Princeton. If I lived in Princeton and went into that office every day, no matter what I learned at Head, it would not stop me from impeding the effectiveness of the company by nitpicking and impeding my own effectiveness by wasting all my energy on details that somebody else could handle better.

Head learned another valuable lesson at Head Ski; the necessity of compatible objectives among the owner and the top officers. In January 1967, Howard Head had appointed Hal Seigle to be chief executive officer of Head Ski Company, and though Head himself called Seigle a man with "proven professional management skills, I got increasingly frustrated because we were so diametrically different. He was a manager who focused on broad aspects of company organization and expansion by acquisition. From my standpoint he did not pay enough attention to detail and he was not product oriented."

Twelve years later, Jack Murray became the president of Prince, whom Head credited with "shepherding the company through its spectacular growth, partly on his own ability and partly because there is a great marriage between his motivational character and my vision and creativity." Head claimed that Murray's leadership was "absolutely essential" and that the results in the company during his time as president "speak for themselves about how effective he is." Furthermore, Head pointed out one of Murray's strongest assets: he "knows the names of everybody in the company."

But it was Murray who was reluctant to project the 100% increase in sales which Head felt was sure to occur in 1981. Murray also disagreed with Head on the issue of a proposed price increase of 10%. Murray felt that the profit margin at the time was sufficient and that a price increase was unwarranted. Head maintained that the company enjoyed the position of having an exclusive product and that he merely wanted to keep up with inflation.

Jim Baugh was the marketing director under Jack Murray, and as Head claimed, a "strong ally" of Murray's. Head explained:

> He is a very conservative thinker, even more conservative than Jack, in terms of projection. He is very, very afraid that Prince will kill itself by expanding its image to include a mid-size racket line. The mid-sized racket has already hit the market, and for Prince to admit that this racket might have something is frightening to a marketing man.

Mal Bash, who came to play a vital role in the development of Prince, was called by Head the "single most important man at Prince":

> Actually he is less of a manager than a doer. What "vice president" [Bash's title] doesn't reflect is the initiative and the drive and the toughness with which he personally went to see Grafalloy and forced them to make a good graphite racket for us. He would take nothing but excellence. He dug them out and grappled with them and he wouldn't take anything but good results from them. He also went to Taiwan and instead of doing what the normal Taiwanese customer does, which is to get wined and dined and womened all over the place, he shocked them by insisting that he personally go in and out of the shop day after day. He was watching what these guys were doing and how they bent the aluminum and how they heat-treated it. I give Mal a very high ranking as a major force in the company. . . .

Even after his experience in hiring the various officers within his organization, Head still maintained this idealistic vision:

> I always had the dream that right out there, there would be a different chief executive officer who would have all my imagination and all my vision and all my critical judgment and all my creativity and all my positives, and who at the same time was a superlative manager, remembered faces, knew all the boys, loved

> people, people loved him back. . . . It's only as I look back on it in a philosophical way that I see how crazy it is to expect all these qualities in one person. It would be like expecting Leonardo Da Vinci to play a great game of soccer. . . .

Head also said that if there was one thing he would emphasize, it would be that his first requirement in hiring someone to be a part of his vision of growth would be

> . . . their attachment to me, either because they were like me or because they respected me or were fascinated by the project. I would avoid people whose views were diametrically different from mine, as in the case of Seigle and some of the earlier marketing people at Prince. . . .

Toward the Future

Howard Head had done well financially, he earned a handsome sum in royalties on top of retained earnings, and as he explained:

> The royalties were indeed earnings to me, quite independent of my share in the earnings of the company. There is an interesting point regarding the royalties—they were received by me as capital gains (i.e., 22%), but they were expense to the company (50%). Originally I assumed that when the patent was issued, I would give ownership of it to Prince. But my patent attorney was adamant that I keep title to the patent in my own name in order to take advantage of the tax law which provides for the above anomaly.

In 1981, Head saw the company through the $35 million mark, and despite the conservative forecasts of his top management, predicted gross sales of $60 million for the following year. (See **Exhibit 5** for financial statements 1979-81, and **Exhibit 6** for Head's 1982 business plan.) While he was excited about the prospects of enormous growth in the following years, he was concerned about his ability to continue to manage an operation of this size. (See **Exhibit 5** for consolidated balance sheets and 1982 business plan.) Moreover, he questioned if the company was prepared to grow, or if there were further measures he would have to take in order to reach the next plateau. Did he have the right people, and what would his own role be if he stayed on at the helm? Was it within his capacity to broaden the organization or was it time to exit gracefully while luck was with him? These difficult questions would have to be answered soon.

Exhibit 1 Prince Financial Summary

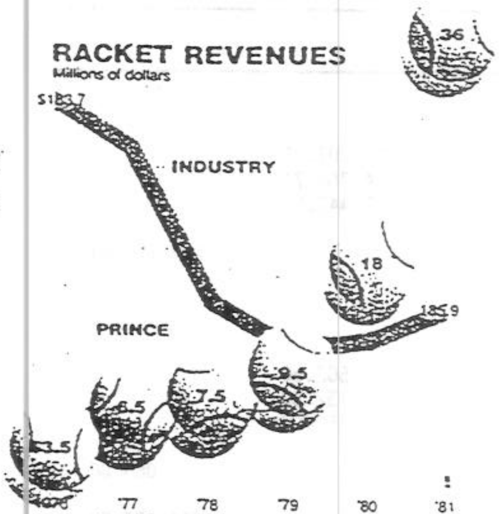
Year Ended	Rackets	Gross Sales	Net Earned	%
July 1971		$ 32,200	$ 830	2.6%
July 1972		100,000	15,000	15.0
July 1973		580,000	106,000	18.3
July 1974		1,151,000	150,000	13.0
July 1975		1,165,000	74,000	6.4
July 1976	70,000	2,946,000	227,000	7.7
July 1977	160,000	5,051,700	329,000	6.5
July 1978	180,000	7,142,900	200,500	2.8
December 1979	190,000	9,411,800	340,900	3.6
December 1980	300,000	17,785,900	1,668,000	9.4
December 1981	500,000	34,937,800	4,397,600	12.6

Exhibit 2 Balance Sheet, July 31, 1971

Assets		
Current Assets		
Cash	$ 902.95	
Accounts receivable	4,764.74	
Inventory, at cost	7,442.87	
Total Current Assets		$13,110.56
Other Assets		
Patents	502.56	
Organization expense	132.50	
Security deposits	450.00	
Total Other Assets		1,085.06
		$14,195.62
Liabilities and Stockholders' Equity		
Current Liabilities		
Accounts payable	$ 5,402.43	
Loans payable—stockholders	10,600.00	
Accrued federal and state income taxes	307.41	
Other accrued liabilities	355.88	
Total Current Liabilities		$12,165.72
Stockholders' Equity		
Capital stock	1,200.00	
Retained earnings—net income for year	829.90	
Total Stockholders' Equity		2,029.90
		$14,195.62

Exhibit 3 Tennis Racket Sales Revenues: Prince *versus* Industry (1976-81)

Like a Shot Past Helpless Rivals



Sources: National Sporting Goods Association, Prince Manufacturing Co.

Tennis stumbled in 1977 and racket sales fell severely. But Prince Manufacturing, represented by the bouncing tennis balls, came on like a summer storm, starting behind the mountain in 1976 and drenching the competition. Industry sales are reported at retail. Prince's are its wholesale receipts, the only figures available; a common retail markup is around 40%.

Exhibit 4 Tennis Racket "Sweet Spot": Prince *versus* Conventional Racket

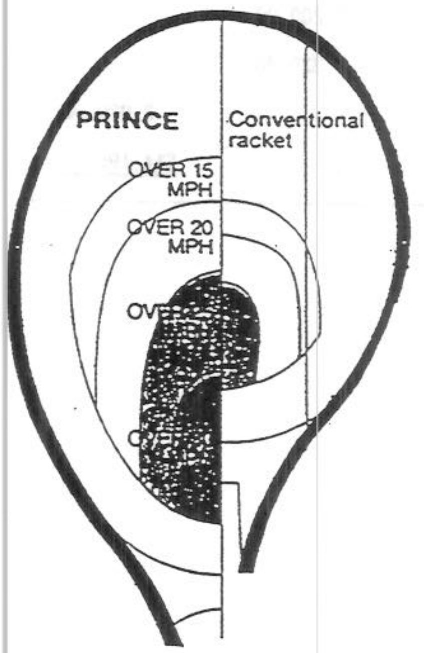


Exhibit 5 Consolidated Balance Sheets as of December 31, 1979-1981

Assets	1981	1980	1979
Current Assets:			
Cash	$ 924,815	$ 410,212	$ 305,964
Receivables	5,324,384	3,299,985	1,618,597
Inventories	4,478,500	2,178,769	858,842
Prepaid expenses	156,163	100,486	57,867
Total Current Assets	$10,883,862	$5,989,452	$2,841,270
Plant and equipment, at cost:	$ 1,181,022	$ 693,779	$ 576,192
Less accumulated depreciation and amortization	287,225	171,104	104,210
Net plant and equipment	$ 893,797	$ 522,675	$ 471,982
Other assets	40,097	80,409	134,334
Total Assets	$11,817,756	$6,592,536	$3,447,586
Liabilities and Stockholders' Equity			
Current Liabilities:			
Notes payable	$ -	$ -	$450,000
Current installments of long-term debt	42,723	42,723	97,208
Accounts payable	1,212,955	813,237	670,548
Accrued expenses	1,268,375	733,998	367,645
Taxes currently payable	1,343,651	1,485,131	266,878
Deferred income taxes	283,499	206,499	87,499
Total Current Liabilities	$4,151,203	$3,281,588	$1,939,778
Long-term debt, excluding current installments	$ 42,041	$ 84,084	$ 127,607
Deferred income taxes	-	9,000	4,000
Stockholders' Equity:			
Common stock without par value	249,643	299,643	75,965
Retained earnings	7,373,869	2,976,221	1,308,236
	$7,623,512	$3,225,864	$1,384,201
Less cost of shares in treasury	8,000	8,000	8,000
Total Stockholders' Equity	$7,615,512	$3,217,864	$1,376,201
Total Liabilities and Stockholders' Equity	$11,817,756	$6,592,536	$3,447,586

Exhibit 5 (continued) Consolidated Statements of Earnings and Retained Earnings, 1981, 1980, and 1979

	Years Ended December 31, 1981	1980	1979
Net sales	$34,937,800	$17,785,896	$9,411,759
Cost of sales	16,905,951	8,818,221	5,443,393
Gross profit	18,031,849	8,967,675	3,968,366
Selling expenses	5,816,675	3,019,782	1,738,475
Administrative expenses	3,477,287	2,142,262	1,337,883
	9,293,962	5,162,044	3,076,358
Operating profit	8,737,887	3,805,631	892,008
Other income (expenses):			
Royalty income	437,597	253,341	108,252
Royalty expense	(1,119,945)	(574,580)	(274,492)
Interest expense	(22,969)	(71,943)	(76,818)
Miscellaneous	115,078	4,536	1,965
Net other income (expenses)	(590,239)	(388,646)	(241,093)
Earnings before income taxes	8,147,648	3,416,985	650,915
Income taxes:			
Current	3,673,000	1,626,000	249,584
Deferred	77,000	123,000	60,416
	3,750,000	1,749,000	310,000
Net earnings	4,397,648	1,667,985	340,915
Retained earnings beginning of year	2,976,221	1,308,236	967,321
Retained earnings end of year	$ 7,373,869	$2,976,221	$1,308,236

Exhibit 6 1982 Business Plan: Statement of Earnings, Foreign and Domestic ($000s)

	Total	Domestic	Foreign
Total:			
Rackets	$58,359	$39,601	$18,758
Racket accessories	2,999	2,549	450
Machines	1,450	1,234	216
Total	$62,808	$43,384	$19,424
Cost of sales	31,540	19,626	11,914
Gross profit	31,268	23,758	7,510
% of net sales	50%	55%	39%
Operating Expenses			
Sales and marketing	11,220	8,522	2,698
Warehouse and shipping	697	481	216
Administrative and general	3,937	2,949	988
Research and engineering	791	546	245
Total	$16,645	$12,498	$ 4,147
Operating profit	14,623	11,260	3,363
% of net sales	23%	26%	17%
Royalty and Interest			
Royalty income	$ 450	$ 310	$ 140
Royalty expense	1,975	1,412	563
Interest income	200	138	62
Total	$1,325	$ 964	$ 361
Income			
Pretax income	$13,298	$10,296	$ 3,002
% of net sales	21%	24%	15%

APPENDIX

CHRONOLOGICAL DEVELOPMENT OF PRINCE MANUFACTURING, INC.

1969	Howard Head sells Head Ski Co. to AMF for $16 million.
1970	Retires. Renovates new home. With new tennis court.
July 1971	Orders Prince ball machine upon advice of tennis pro; began dialogue to "debug" machine.
October 1971	Buys 27% of Prince for $27,000; becomes chairman of board and de facto chief engineer.
1974	Begins racket experimentation; first using weights, then conceived spreading weight out (thus increasing area).
1974-1975	Controlled testing of experimental model begins.
May 1975	Head decides to go into production: 35,000 rackets necessary minimum order from Maark. (Sold 70,000.)
1976	Patent #3,999,756 granted: import of patent in scope and ownership.
1978	Noted need for Pro and Graphite.
1979	Manufacturing problem is solved. (Kunnan Lo & Grafalloy)
1980	Pro and Graphite models added to Classic. Sales take off.
1981	Sales volume again doubles.
1982	Head proposes mid-size rackets.

Chapter 6

Idea Generation

New products are, by their very nature, innovations. These innovations result from creative insight and free thinking. Such creativity is crucial to success. This chapter explicitly deals with techniques for the enhancement and management of creativity in opportunity identification. After the priority markets have been defined and target consumers selected, the organization must generate ideas that tap the potential of these markets. These ideas are not the final product, that will be iteratively determined throughout the development process, but these ideas do form a basis for further investigation and a set of starting points for innovation.

While it may be possible to develop ideas in a vacuum, it is more productive to couple creativity with information from various sources such as marketing, R&D, and engineering. We begin with a discussion of how to tap various idea sources and then describe several methods to use this information for idea generation. The emphasis is to create major innovations and new product concepts that may expand existing markets or develop new markets. The final section discusses idea management by setting guidelines to screen initial ideas and it discusses how to select the appropriate number of ideas to advance to the design phase of the development process. The output of idea generation is a set of exciting product concepts. The design effort then evaluates their market potential, refines the product positioning, and converts them into reality.

IDEA SOURCES

New product activities start from a number of alternative initiating forces such as market needs, technological development, improvements in

engineering and production, inventions and patents, and competitors' actions. These forces also act as sources of ideas. To be effective the organization should not look only at the initiation source, but at all potential idea sources. For example, a competitor may introduce a new product and thus force innovation by your organization. While there is pressure to respond with a "me too" or second but better strategy, more effective ideas could come from examination of market needs or from a recent technological development. To tap these idea sources we must first understand their potential.

Market Needs and User Solutions

One of the bases for a proactive strategy is a consumer-oriented philosophy of seeking to understand consumer needs and desires. Chapter 2 demonstrated that 60 to 80 percent of the successful technologically based products have their idea source in the recognition of market needs and demands and that the financial return from market based products tends to be higher. Since new products achieve final success through sales and profit, the consideration of market needs seems to be the most obvious source of ideas. However, many organizations do not allocate their idea generation resources to this area in proportion to its potential returns.

The power of the market in generating product opportunities has been already identified in several industrial product classes. Table 6.1 summarizes the role of the consumer of industrial products in generating successful ideas in several industries. These studies illustrate the major role of consumers in product innovation. Not only do consumers represent a source of potential needs, but they often provide solutions to these needs. In some cases a user may have solved a problem that your organization is only beginning to address with a major R&D project. There is a growing body of literature to suggest that users are active in the innovation process, not just recipients of new products (Rogers, 1978). For example, Figure 6.1 gives the level of solution content observed by a variety of researchers across a number of industries.

In consumer products, the consumer need and user solutions are equally likely to be an important source of ideas. Although it is less likely that a consumer will come to a manufacturer with a complete idea, they may have developed solutions that are a valuable basis for a new product.

Here are some examples. (1) The "banana seat" and motorcycle style "high bars" on children's bikes were first developed by kids themselves. Later manufacturers adopted the "chopper" style which is a major portion of the market today. (2) Women's use of eggs along with their shampoos, to give more body to the hair, was the solution adopted in the protein shampoo market. (3) Army corpsmen found their regular issue ammunition carriers, which fit on the belt at stomach level, were difficult to open, raised the body when crawling, and carried only half the required ammunition. Some users solved the problem by adopting a pouch, originally designed for transporting small land mines, into an ammunition pouch. A design based on this user solution is now being proposed for adoption by the military.

WHARTON REPROGRAPHICS

Table 6.1. Frequency with which Manufacturers Initiated Work on an Industrial Innovation in Response to a Customer Request[a]

Study	*Nature of Innovations and Sample Selection Criteria*	*No.*	*Data Available Regarding Presence of Customer Requests*
A. Studies of Industrial Products			
Meadows	All projects initiated during a two-year period in "Chem Lab B" — Lab of a chemical company with $100–300 million in annual sales in "industrial intermediates."	29	9 of 17 (53%) commercially successful product ideas were from customers.
Peplow	All "creative" projects carried out during a six-year period by an R&D group concerned with plant process, equipment and technique innovations.	94	30 of 48 (62%) successfully implemented projects were initiated in response to direct customer request.
von Hippel	Semiconductor and electronic sub-assembly manufacturing equipment: first of type used in commercial production (n = 7); major improvements (n = 22); minor improvements (n = 20).	49	Source of initiative for manufacture of equipment developed by users (n = 29) examined. Source clearly identified as customer request in 21% of cases. In 46% of cases frequent customer-manufacturer interaction made source of initiative unclear.
Berger	All engineering polymers developed in U.S. after 1955 with > 10 million pounds produced in 1975.	5	No project-initiating request from customers found.
Boyden	Chemical additives for plastics: all plasticizers and UV stabilizers developed post-W.W. II for use with four major polymers.	16	No project-initiating request from customers found.
Utterback	All scientific instrument innovations manufactured by Mass. firms which won "IR-100 Awards," 1963-1968 (n = 15); sample of other instruments produced by same firms (n = 17).	32	75% initiated in response to "need input." When need input originated outside product manufacturer (57%), source was "most often" customer.
Robinson et al.	Sample of standard and non-standard industrial products purchased by three firms.	NA	Customers recognize need, define functional requirements and specific goods and services needed *before contacting suppliers.*
B. Studies of Research-Engineering Interaction			
Isenson (*Project Hindsight*)	R&D accomplishments judged key to successful development of 20 weapons systems.	710	85% initiated in response to description of problem by application-engineering group.
Materials Advisory Board	Materials innovations "believed to be the result of research-engineering interaction."	10	In "almost all" cases the individual with a well-defined need initiated the communications with the basic researchers.

[a] *von Hippel (1978), p. 38*

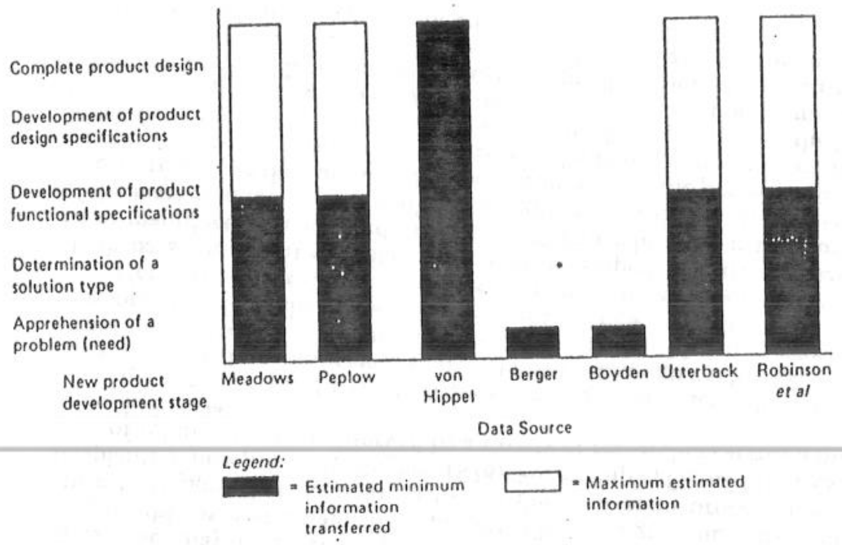


Figure 6.1. *New Product Development Data Supplied by Customer to Manufacturer (adapted from von Hippel, 1978, p. 43)*

Consumer product firms generally have not been enthusiastic about the receipt of user ideas since these suggestions present legal liabilities for the organization (Crawford, 1975). For example, if an unsolicited idea is not properly handled, a subsequent product developed independently in the organization may be claimed by the suggestor. Some firms find so many legal difficulties that they reject all consumer new product suggestions.

For example, Gillette rejects ideas unless they are patented. This means rejecting almost all unsolicited consumer input on new products.

> The inherently unpatentable ideas we refer to include suggestions relating, for example, to the advertising or sale of our products, to proposed new uses for present products, to the addition of products to our present lines, or to changes in our methods of doing business . . .
>
> We recognize that this policy does have some disadvantages for Gillette. For one thing, it does not allow us to consider a large number of ideas received from the general public, the people who use our products and on whose good will we depend for our successful operations. We regret this result, but at the same time hope the persons submitting such ideas will understand why we believe the legal risks involved outweigh the benefits which might be obtained from our considering such unprotected suggestions (Gillette, 1972).

Rejecting consumer ideas through policies like this may lead to overlooking many good ideas and profit opportunities. Although legal problems are present in accepting ideas, they may be effectively addressed by the use of a legal waiver and careful process to handle the receipt of and a response to suggestions. But in many cases these procedures are not utilized. Crawford found in a survey of 166 companies that 12.6 percent rejected all outside consumer suggestions, 67.5 used legally dangerous procedures of evaluation, and 19.9 percent of companies considered the ideas by legally sound procedures. We recommend accepting consumer ideas, but only after the organization has set up a legally sound procedure.

Technology

While the recognition of consumer needs and user solutions is the most important source of ideas, recognizing trends in technology is also important. New technologies can present new opportunities to meet consumer needs or can fill needs that were previously latent. For example, Bell Labs was exploring technologies that could allow pictures as well as voice to be transmitted over the telephone. The result was "television." A public demonstration was given in 1927. Although Bell Laboratory's technology has not yet led to a commercially successful video telephone, it is the basic technology for today's TV entertainment industry. Bell Labs is now working on a lightwave transmission system using glass fibers. This may have potential for many products other than telephones. Keeping aware of technological change and opportunities represents a valuable source of ideas for new products.

Engineering and Production

Engineering and production are often neglected as a source of innovation as firms use R&D and marketing to find new product ideas. For example, in the studies by Myers and Marquis (1969), 20 percent of the successful new technological products had their idea source in production. In project HINDSIGHT, Isenson (1969) studied 20 military weapons systems and found that in 85 percent of the major technological developments, application engineering groups originally described the problem. The problem solving skills of engineers applied to the needs of the market produces an important source of new ideas.

Inventions and Patents

While internal R&D, engineering production, and marketing are valuable sources of ideas, external sources should not be overlooked. Contacting inventors and searching for patents may present new ideas for consideration. External consulting companies may have a portfolio of ideas that can be reviewed or suppliers of materials may have developed ideas for use of their raw materials in new final products. Sometimes acquisitions of small companies represent an opportunity for a new product. These acquisitions should be considered with ideas generated from internal and other external sources.

Competitors and Other Firms

The reason for competitors' success and knowledge about their developmental strategies are important inputs to idea generation. Even if a firm is a proactive leader in an industry, it must be ready to defend against competitors by preempting such innovation or improving on competitive firms' new products.

Noncompetitive firms may also be the source of new product ideas. Often acquisitions are possible and represent an attractive way to internalize the new product ideas of another firm.

Management and Employees

The creative potential of an organization is high. Managers and employees who are not directly involved in the new products effort may have valuable ideas and insights. This internal source of innovation can augment the creative efforts of the development team.

METHODS OF GENERATING IDEAS

The previous section listed some of the potential idea sources. To achieve success, an organization must be prepared to fully utilize these idea sources. Methods to generate such ideas can be as simple as setting up information channels that are sensitive to idea sources or as sophisticated as using creative group methods. Figure 6.2 shows some methods of idea generation that can be used to tap the areas of potential and lead to product concepts or prototype ideas.

Some creative ideas come directly from the environment and all an organization must do is to be sensitive to the ideas sources and conduct a direct search of opportunities. Other ideas require exploratory consumer studies or technology forecasting. Still others come by combining needs and technology through consumer engineering. Finally some ideas come from

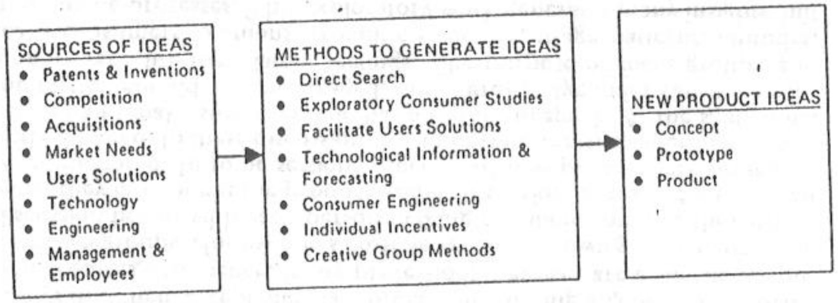


Figure 6.2. *Idea Sources and Methods for Generation*

individual effort or from creative group methods which utilize group dynamics to encourage imagination. Although an organization could rely on only one method, the best approach is to use several idea generation methods, covering all the sources of potential ideas.

The goal of idea generation is a large number of very different ideas. The more ideas generated in this step, the more likely one or two of those will pass the screening tests in the idea management phase and progress toward the design phase of the development process.

Direct Search

To effectively tap external idea sources, it is useful to allocate people to do basic information collection. For example, an organization might hire lawyers or assign a company person to search for patents that may be of interest to the firm in penetrating the target market. Competitive activity can be monitored by a feedback system which reports a competitor's sales practices, distribution, and new products. For example, some consumer products firms "read" a competitor's new product test markets. In some industrial companies, special employees travel to all the relevant trade shows to learn as much as possible about the competitors' new products. In others, the sales force reports competitive activity and new product needs.

Search efforts can be made to investigate acquisitions and thereby obtain product experience and development skills. Even such simple actions as a systematic analysis of complaints and warranty cards may identify problems that reflect a new product opportunity. There are many obvious activities such as those outlined above which should be conducted in a particular organization's target market.

Exploratory Consumer Studies

Since market needs reflect the highest potential source of ideas, the closer and earlier the new product developers get to the consumer the better. Observing how people buy and use the product can be done initially by casual observation or introspection on one's own behavior. Although this is useful, care must be taken not to generate fixed opinions based on these ad hoc observations since the observations may not be based on a representative sample of consumers.

A widely used method of gaining a knowledge of consumers is through focused group discussions or what are termed "focus groups" (Calder, 1977). The group is usually made up of eight to ten users of the product. It may be housewives talking about hand lotion, corporate controllers talking about the purchase of computers, or patients talking about hospital services. The group is brought to a central location and the members are usually compensated by $10 to $25 for one to two hours of their time. A moderator conducts the discussion. The session is taped and it is not uncommon to have a one-way mirror so that company personnel can observe the discussion. Discussants are informed of these observations or recordings and almost always find them acceptable. The process of running a good group discussion requires experience; many professional services are available to conduct such groups. However, it is possible to run your own group. Usually the discussion begins with each person making comments on how they use or when they last bought the product under discussion. Likes and dislikes can be enumerated. In some sessions concepts of new products are presented and evaluated. In these discussions it is important for the leader to maintain control and make sure everyone has a chance to speak. At the same time, interaction should be encouraged, since group dynamics can help consumers verbalize their latent feelings. The purpose of focus groups is to learn consumers' opinions, semantic structure, usage patterns, attitudes, and buying processes. This exploratory work generates many insights, but even if three or four groups are run, the results can only be suggestive. The work is qualitative not quantitative. Insight and hypotheses are generated, not final conclusions.

A great advantage of a focus group is that it allows an early contact with users and provides an in-depth initial feeling for the products now in the target market. Consider a group discussion on hand lotion. Before the session, ten women were casually waiting with their hands on the table or in view. Within five seconds after the moderator announced that the discussion was about hand lotion, all hands had been placed under the table or out of sight and the women's faces became tense. Discussion revealed considerable guilt and shame about the condition of their hands. Further exploration revealed anger that housewives are expected to have soft hands, but must do abusive work such as washing dishes in detergents and cleaning floors while their husbands sit in offices with perfectly soft hands. Although this discussion did not directly generate a specific new product, it produced much insight into the product needs; eventually it led to a concept called "Hand Guard" which was designed to protect hands during dish washing.

While focus groups are most commonly used on consumer products, they can and have been used in developing services (e.g., health, transportation, and education) and industrial products (computer information systems). In each case the focus groups led to improved insight into consumers' needs and desires.

For example, a focus group on high efficiency electric motors conducted for the Department of Energy (*Market Facts*, 1978) indicated that the common practice is to evaluate motors on the basis of first cost rather than cost over the product's in-use life and that efficiency is not now a purchase criteria. This strongly indicates a marketing problem that the product will face. The group went on to suggest ways to educate the field through special programs, regulation, and incentives for manufacturers.

We recommend focus groups in all new product development processes. Even when a company feels they know their market, the development team will learn a great deal more at a low cost from observing focus group discussions.

Other individual exploratory consumer research is possible. In fact, the research conducted in the efforts to define the market (Chapter 5) can be useful. For example, if the perceptual dimensions of the hand lotion market are effectiveness (healing red, rough hands) and application (not greasy, soaks in), positioning gaps may become clear when existing brands are placed on the maps. A gap in an area on the map where no products now exist and where consumer preference can be expected is a good opportunity. (See chapters 9 and 10.) The hierarchical definition of markets may suggest ideas. For example, a regular instant coffee was indicated as a high potential area in the example in Chapter 5. These general ideas could be expressed as concepts and explored by personal interviews with a small sample of consumers. These would be "in-depth" interviews aimed at getting unstructured response to the ideas and insights that would be the basis of improvement.

Another kind of in-depth interview is oriented at finding problems consumers have and identifying opportunities for products to solve them. Other approaches concentrate on the benefits the consumer perceives the product as delivering and identifying situations where the consumer wants to receive more benefit (Myers, 1976).

Although there is no general rule about which method of exploratory consumer study is best, it is clear that early consumer interaction should be achieved. Whether one is interested in deodorants, machine tools, travel services, office systems, or banking, it is recommended that early contact be made with consumers so that the problem of understanding needs and the usage process can begin. This understanding is vital for successful idea generation.

Facilitate User Solutions

As indicated earlier, users not only have needs but may possess solutions. Rather than wait for the users to bring solutions to us, we could expend effort to find and facilitate this problem-solving process. For example, we could survey users to find out what special problem they have solved and inspect their prototypes. We could supply parts to innovative users at low cost to allow them to create solutions more easily.

Another approach is to set up a special program for custom one-of-a-kind work. This would put the company in a position close to the user need and solution process. A Boston electronics firm specializing in test equipment for integrated circuits decided to cut its one-of-a-kind production facility because it was not profitable. This decision was reversed when it was determined that most of the firms' products had developed from projects initiated as a one-of-a-kind machine. The user solution requirements had been generalized to a wide market.

Innovation can also occur through product modification by users. Xerox's first machines were not used for copying as intended, but rather to make offset masters. This user adaption was important in carrying the firm through its early period until the machine's speed and reliability could be improved enough to meet the market office copying requirements. Flexibility of product design and tracking user adaptation is an important method for generating ideas for overall product improvement.

Users may have solved your development problem. It is useful to examine your organization's past history and see where successful ideas have come from. If users have been active contributors, you should devote effort to cultivating them and maximizing their input to the idea generation process.

Exploiting Technology

Consumer input is crucial to success in the marketplace, but, as argued in Chapter 2, new product strategies should be comprehensive strategies based on both consumer input *and* research and development. An organization should encourage communication between marketing and the R&D laboratory and should allocate effort to understanding and monitoring the process of technological transfer. We first address these issues in R&D management which deal with information and then suggest methods of technology forecasting.

Information Flow. If technological ideas are to be generated, the most recent and relevant technical information must be in the hands of the project group charged with developing a new product within the specified market. This means that information channels within the R&D laboratory and between technical areas of capability within the company must be functioning. Also, technical material from outside the firm must find its way to the developers.

External sources of technology are important. Mansfield et al. (1971, p. 178) found that for pharmaceuticals 54 percent of the major innovations between 1935 and 1962 were based on discoveries made outside the firm. In development of numerically controlled machine tools, for example, manufacturing firms have been heavily dependent upon technology that was not present in their own firms.

While the external sources are important, information within the firm should not be neglected. Marquis (1969) found that in 41 percent of the innovations he studied, the key innovative information resulted from the person's own training and experience. This implies there is a considerable pool of talent for generating ideas if channels of communication are developed.

A key phenomenon in R&D communication has been identified by Allen (1970). He found that only a few individuals were connected to outside information sources and that these individuals acted as "gatekeepers" for their colleagues. They obtained, screened, and transmitted information. Figure 6.3 shows a typical information flow network. New information brought by individual one is transmitted to three other gatekeepers, and reaches its eventual users through their contact with the gatekeeper network. The gatekeepers read journals more extensively and have more per-

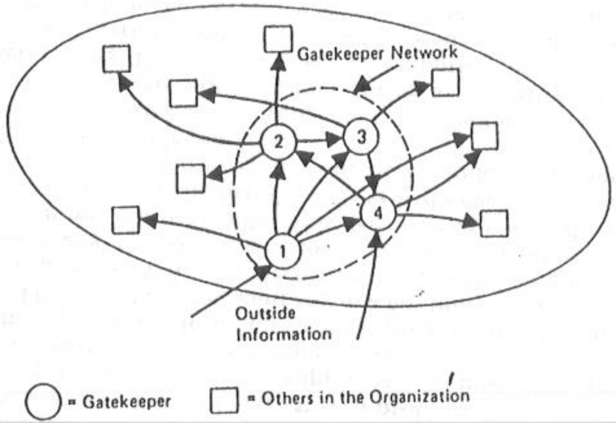


Figure 6.3. *The Functioning of the Gatekeeper Network (Allen, 1977, p. 162)*

sonal contacts outside the organization (Allen, 1977, pp. 146–147). They have a reputation for technical competence; others rely on personal contact with gatekeepers for information. To use this information source effectively, gatekeepers should be identified, rewarded, and supported. This facilitates their exposure to technological information and does not obstruct the interpersonal network used to diffuse the information in the lab.

The personal nature of information exchange can be increased by transfers of personnel within the company's divisions. In a large chemical lab, it was found that transferring persons provided an effective communication link back to their old divisions for one to one-and-a-half years (Kanno, 1968). Of course this use of transfers for information flow must be balanced against any potential detrimental effects of the transfer on the original project output.

In addition to the use of the gatekeeper network and personal contacts, physical layout is important for improving communication. Figure 6.4 shows the probability of communication between R&D lab personnel as a function of the distance between them. This is based on Allen's study of communication contacts in seven research labs (aerospace, universities, chemical, computer, and agriculture fields). The amazing fact about this curve is how fast and far it drops. After a separation of 30 feet, the probability of communication in a week is less than one-third of its maximum. It is approximately 0.05 at 65 feet. If people are on different floors or in different geographic locations, the chances of communication are even smaller. These findings imply that physical layout is important if communication is to be improved. People should have offices as close as possible, and meetings should be arranged to bring people into personal contact. Experimentation has shown

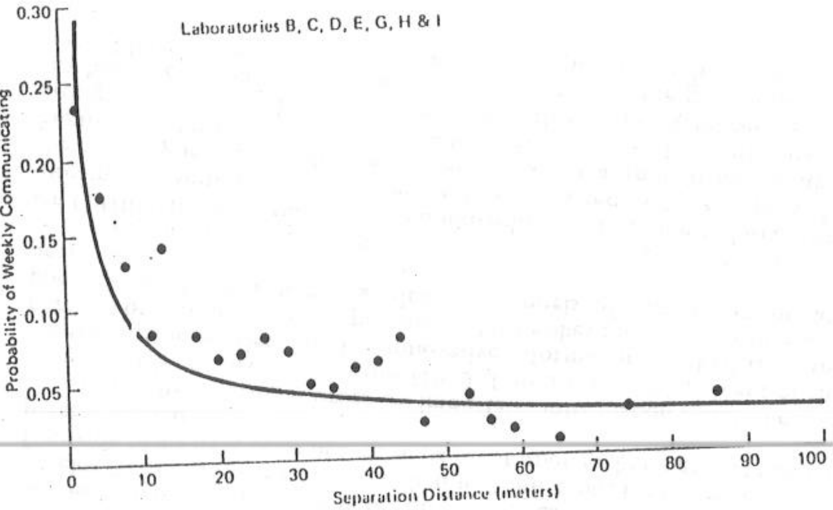


Figure 6.4. *Probability of Communication in a Week as a Function of the Distance Separating Pairs of People (Allen, 1977, p. 239)*

communication can be increased by changing architecture to reduce distances (Allen, 1977, pp. 248–263).

Technological Forecasting. Action to improve communication flows is important to exploring the potential of technological ideas. Another method of locating areas of potential is through technological forecasting. The most common approaches to technological forecasting are based on trend extrapolation and on expert judgments.

Figure 6.5 shows the trend of the number of components per integrated circuit. Clearly any firm operating in this industry must plan for products based on this trend. It is interesting to note that Gordon E. Moore, then at Fairchild Conductor, noted the trend in 1964 and predicted that it would continue (Noyce, 1977, p. 67).

Figure 6.6 shows a decline from 50 cents per bit to 2 cents per bit as the capacity of integrated circuits has increased. The primary reason for this reduction is the increasing complexity of successive circuits, but a secondary reason is that less complex circuits also continue to decline in cost. Hardware and memory costs of computers are approaching almost zero. This would indicate a major opportunity to develop computer software that utilizes the lower-cost hardware.

Examining trend data for costs and productivity can be useful in identifying ideas. Various statistical methods are available to project these trends. Most are curve fitting procedures based on extrapolation (Ayres, 1969, pp. 94–140). More elaborate dynamic models that include the effects of R&D

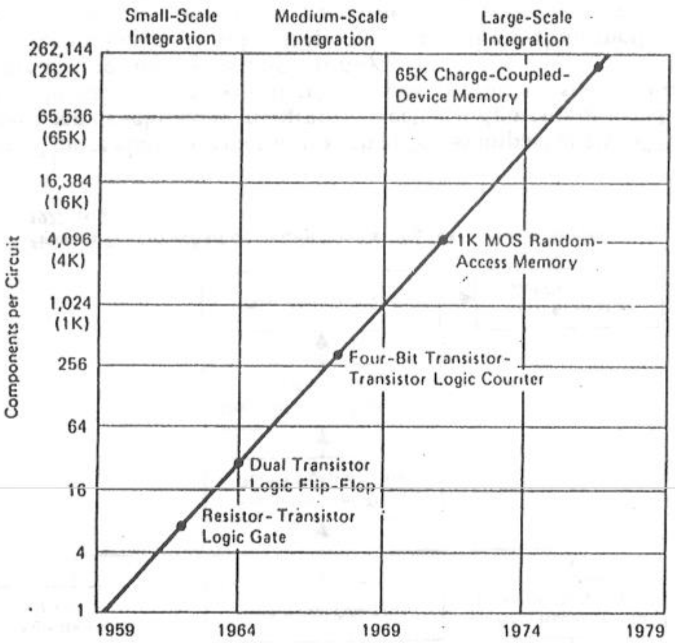


Figure 6.5. *The Trend in the Number of Components per Integrated Circuit (Noyce 1977, p. 67)*

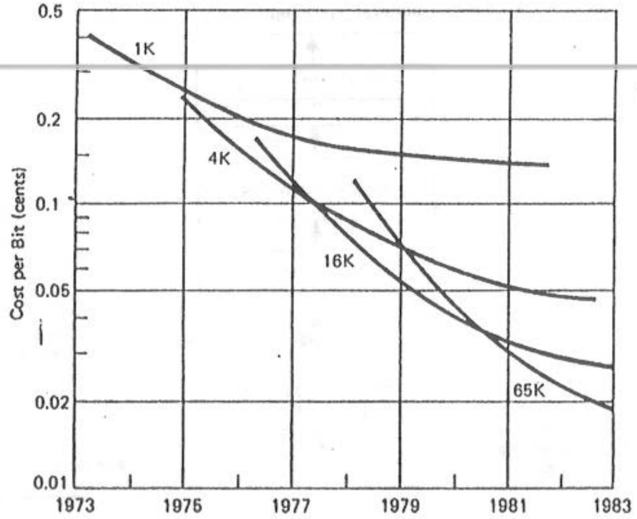


Figure 6.6. *Cost per Bit Trend (Noyce, 1977, p. 69)*

esource allocation on technological progress and specialized models for nilitary purposes have been developed (Roberts, 1969; Sigford and Parvin, 1965).

Often it is useful to examine and extrapolate the costs of two or more elated technologies (Quinn, 1967). For example, a large British chemical roducer found a way to shatter used tires after they had been frozen by iquid nitrogen and then salvage the steel belting. This process initially was conomically unfeasible, but the firm monitored the trend. After ten years, he price of steel had risen and the price of nitrogen had decreased so that his process became practical and could be introduced.

Technological forecasting requires careful projection and monitoring f trends. Even if the curve projections are wrong, they indicate opportuniies which can be monitored to determine the appropriate time for a technologically based innovation. There is often ample warning before a technology achieves economic impact. Effort should be directed at diagnosing technological change (see Bright, 1970; and Utterback and Brown, 1972).

While trend extrapolation is an important approach to technological forecasting, the prediction of some future events are better handled by other means. For example, will nuclear power become widely available to Third World Countries by 1990? The answer to this question affects the types of products that will be feasible in these countries. Another example would be the possibility of manufacturing drugs in space. If this is practical, a whole range of ideas may be generated and regarded as feasible.

Forecasting long range and discrete technological events is often done by the use of expert judgment. Summaries of potential technological developments are generated and then expert opinions on the likelihood of them occurring are collected by "Delphi forecasting." In the Delphi approach, each expert in the group anonymously judges the likelihood and then opinion feedback and other data is reported to the group before new estimates are made. The process is repeated until a group agreement is obtained for the estimates. Figure 6.7 shows a flowchart for Delphi forecasting. About 15 to 20 experts are used as a panel. They provide inputs of a questionnaire after relevant outside data is provided. After the first estimates, statistical results of the forecasts are fed back to the experts. Usually after three to five rounds, these estimates converge (Dalkey and Helmen, 1963).

Some good results have been obtained by this method. For example, in an application to the construction industry, Delphi forecasting predicted sales within 3.3 percent for each of two years. This was better than previous errors of 20 percent and other forecasts generated by regressions and exponential smoothing.

There are some limitations to the method. In experiments with Delphi forecasting where the true answers were known (statistical almanac), convergence was towards the initial group median rather than the true value (Dalkey, 1969). Few tests of comparative forecasting accuracy have been reported. Delphi forecasting must be treated with caution, but expert opinion and re-estimation can help clarify the issues in predicting technological change.

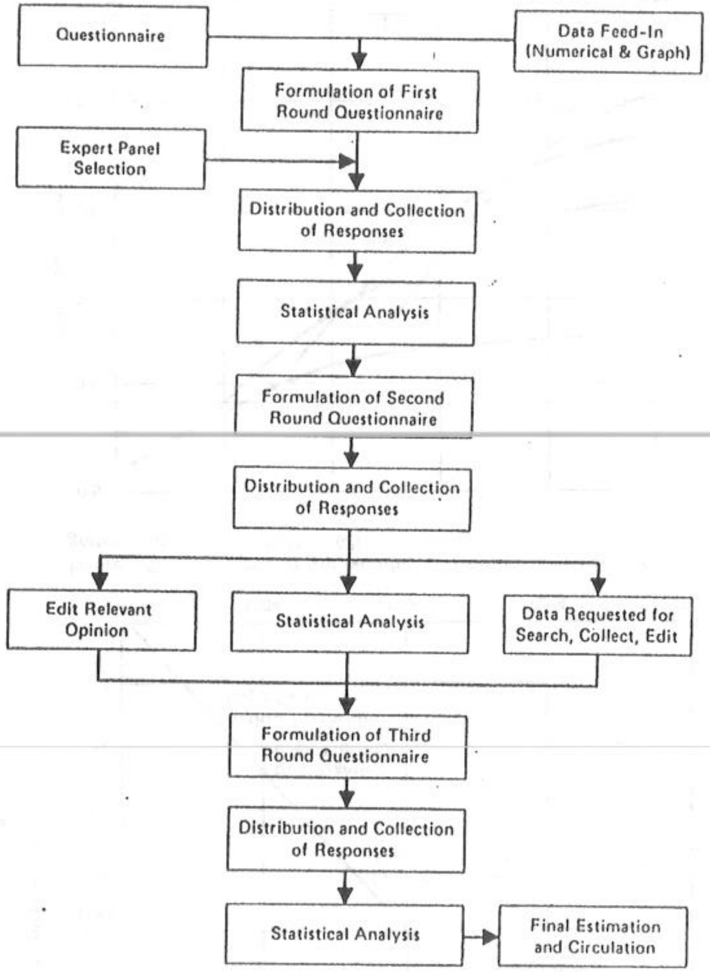

Questionnaire
Data Feed-In (Numerical & Graph)
Formulation of First Round Questionnaire
Expert Panel Selection
Distribution and Collection of Responses
Statistical Analysis
Formulation of Second Round Questionnaire
Distribution and Collection of Responses
Edit Relevant Opinion
Statistical Analysis
Data Requested for Search, Collect, Edit
Formulation of Third Round Questionnaire
Distribution and Collection of Responses
Statistical Analysis
Final Estimation and Circulation

Figure 6.7. *Flowchart of Delphi Forecasting (Basu and Schroeder, 1977, p. 26)*

Several more elaborate methods such as "cross impact analysis" (Dalby, 1971) have been developed to integrate subjective judgments of social, political, and technical changes with market needs to evaluate specific ideas or indicate areas of technological opportunity.

Both technological trend extrapolation and the Delphi methods are subject to error, but it is important to allocate effort systematically to understand the movements in technology and their implications for new product idea generation. Even if an organization expends effort only to monitor rather than predict technological trends, this information proves valuable in the new product development process.

Although the above examples of technological forecasting are primarily for industrial products, they are also applicable to consumer products where such breakthroughs as sugar substitutes, fluoridated toothpastes, teflon coated cooking utensils, universal product codes, automated tellers, medical technology, and computer-aided brokerage are important.

Consumer Engineering

Focus groups and related methods identify consumer needs and desires. Technology forecasting identifies new capabilities. To be successful an organization must match the consumer needs to technological capabilities, even if this matching process requires engineering breakthroughs. For example, Figure 6.8 shows a hypothetical matrix of engineering technologies and markets for watches. The X's indicate when a given technology might be most relevant to a consumer segment.

ENGINEERING OPPORTUNITIES	MARKET OPPORTUNITIES				
	Gift	Status	Jewelry	Women	Men
Light Emitting Diodes	X				X
Liquid Crystal Diodes	X	X		X	
Thin Case		X	X		
Three Modules			X		
5 Components				X	X
Self-Charging Battery					X
Instrument Appearance	X	X	X		
Calculator plus Watch	X				X

Figure 6.8. *Matrix of Engineering Technology Versus Market Segment*

The consideration of the rows suggest ideas for digital watches based on light emitting diodes (L.E.D.) or liquid crystal diodes (L.C.D.) and watches varying in weight, thickness, color, and shape. Most firms have looked at the market this way. This is not a very imaginative use of the technology. How ordinary to put the electronics in the same round case as a mere substitution for hands. Looking at markets (columns) rather than application of specific technologies gives a different and creative perspective. We call this "consumer engineering," because it uses engineering to meet needs in particular segments. For example, Figure 6.9 shows a woman's watch to fill a jewelry positioning. Here engineering is used in a unique way to tap the

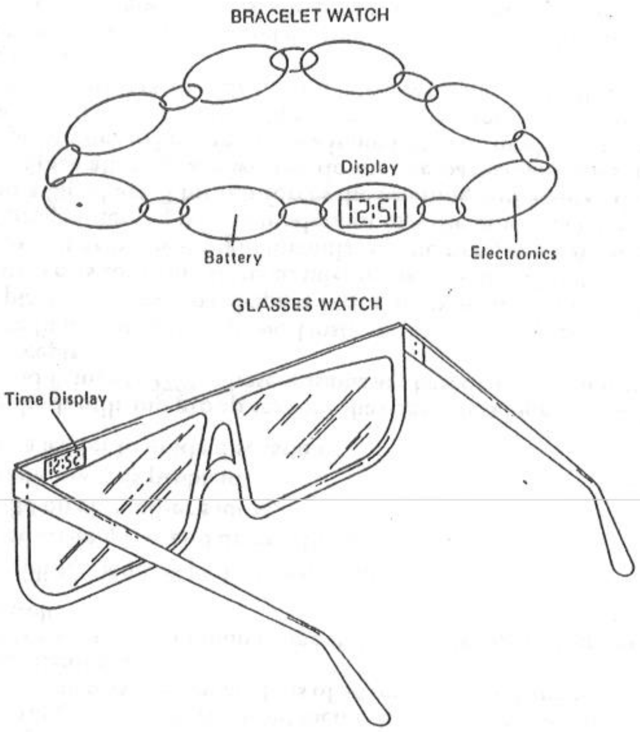


Figure 6.9 *Potential New Product Ideas Based on Consumer Engineering*

capability of the electronics to put components in separate units. Another watch could use this electronic capability to have the display mounted above a pair of glasses and be activated by touching the bow behind the ear. The use of engineering to meet specific consumer needs can be the source of many new ideas.

Another example of consumer engineering is the design of a tennis shoe for clay surfaces based on consumer needs for adhesion and safety. Since skis must "track" well and hold on ice, engineering developments to increase torsional resistance could meet market needs. The use of engineering and technical development skills to match specific market needs can yield ideas with the potential for significant innovation.

Individual Incentives

The success of idea generation depends not only on using effective methods to search idea sources, but on the creativity demonstrated in the

generation process. As shown in Figure 6.2, some ideas come directly from the idea sources while others require more structured search such as technological forecasting or exploratory consumer surveys. Turning the source information into an idea for a new product may be straightforward, or it may come from the spontaneous creativity of an individual within the organization. The organization can set up reward structures to encourage ideas. One of the oldest is the suggestion box, backed by monetary rewards. Another effective method is to designate idea generation as a responsibility for certain individuals and give clear organizational recognition to these people.

Creative Group Methods

Since basic new ideas are so crucial to new product success, many organizations have set up formal creative group methods to synthesize the information on new product potentials. Creative group methods are not magic, they cannot guarantee solutions to impossible problems, but they do encourage a fertile climate for creativity by removing inhibitions and unproductive structures. They force the organization to think beyond obvious solutions to those holding more potential. These techniques assume that each individual has a wealth of knowledge and is by nature capable of creativity. The task is to encourage individuals to draw upon their personal knowledge, no matter how irrelevant it may appear, and apply this knowledge to develop creative solutions, no matter how impossible to implement they may seem. For example, the next creative breakthrough might be triggered by something you know from a recent movie or book, or some common knowledge about the weather, or specific knowledge about opera librettos, football strategies, sailing, sewing, modern art, chemistry, mythology, auto races, physics, biology, or even management. While at first this may seem absurd, experience has shown that "unrealistic" ideas can form the beginning of productive solutions.

In this section we discuss creative group methods of idea generation. We briefly outline several methods and then concentrate on some basic concepts that enhance the success of creative groups. While formal methods may not be appropriate for every new product problem, we suggest that many of the ideas behind creative groups be carefully considered and incorporated in the new product development process.

One of the first group methods of creating ideas was "brainstorming" (Arnold, 1962, pp. 251–268). In this approach a group tries to generate a large number of diverse ideas. No criticism is allowed and group members are encouraged to improve on other people's ideas. It is hoped that through this method, a wide variance of ideas will result, and some will be really new. This basic meeting format has been modified by adding structure in "attribute listing" methods. Attributes are listed for the existing products and then efforts are made to adapt, modify, magnify, minify, substitute, rearrange, reverse, or combine them. For example, among the attributes of the Oreo cookie is the filling. This was magnified to produce the highly successful double thick Oreo. In "forced" relationship techniques (Osborn, 1963), existing items are put together. For example, a new car might be both luxurious and economical.

A more highly structured creative method is represented by "morphological analysis" (Ayres, 1969). There are five steps:

1. explicitly formulate the problem,
2. identify parameters,
3. list all possible combinations of parameters,
4. examine feasibility of all alternatives,
5. select the best alternatives.

For example, in the 1930s Zwicky (Arnold, 1962, pp. 251–268) used this method on jet engines. He identified six parameters (e.g., type of ignition—self-ignition or externally ignited; and state of propellant—gas, liquid, solid). Across the values, 576 combinations could be formed. His examination of these combinations led to several radical new inventions.

Many (over 10) creative methods have been proposed. These existing methods range from unstructured methods such as meditation to structured approaches such as content analysis of advertising and functional analysis of products (Lanitis, 1970).

There are some common elements in the existing techniques that seem to work well:

1. establish openness and participation,
2. encourage many and diverse ideas,
3. build on each other's ideas,
4. orient towards problems,
5. use a leader to guide discussion.

One method, utilizing group sessions, has been developed by both Gordon (1961) and Prince (1972). These sessions are based on four simple, but powerful concepts.

The first concept is to *listen.* Unstructured meetings can often become power plays, with each participant trying to express his pet solution. As a consequence as someone starts to talk, many people will not listen with full attention, but rather will begin formulating their response. A useful method to encourage listening is for a moderator to write down each person's statement on a flip chart. This reinforces the listening and assures that no ideas are lost. Since all ideas are written down, one participant does not need to interrupt another to be sure his idea is not lost. The moderator must control the discussion so that all members can express their views and so that the discussion considers an idea completely without unproductive shifting among ideas.

The second concept is that *most ideas have some good elements.* Since most ideas have some good points, the group must build on these good points while overcoming any bad points. This is done by first identifying the good

ints and then the concerns the idea generates. Then explicit effort is ex- nded in overcoming concerns and making the idea acceptable. One sub- ocess called "itemized response" identifies the good elements, leads to sitive thinking, and rewards the idea originator. For example, a self-think- g typewriter may have been infeasible in 1960, but it was a good idea which uld prove useful once its technical problems were solved. Auto-correcting pewriters and typewriters with memory have been successful innovations office equipment in the 1970s.

The third concept is *a common understanding of a specific problem.* Fre- uently a group will simultaneously work on what appears to be the same roblem, but is in reality several different problems. For example, one per- on may interpret a goal of cleaner air as the problem of preventing pollu- on while another sees the problem as one of cleaning already polluted air hile still another views it as shifting pollution to another geographic area here it can be contained. While each may satisfy the general goal and the inal solution may combine all three, the group process will be difficult if ach is simultaneously working on his separately defined problem. Some roup meetings use a client to define the specific problem. For example, the lient might be the Vice President of Growth and Development who has een told by the President of the company to establish a position in the office opier market. The group then works with the leader and the client to chieve a working definition and common understanding that is used to ddress the problem of creating a new product idea.

The final concept is that of *a specific group leader.* In unstructured roups there is a tendency to jockey for leadership. The leader should be he facilitator and scribe. Since the leader does not have a personal interest in the problem, he can concentrate on encouraging effective group functioning.

These four concepts can be used to improve any group process. Prince's (1972) formal process makes good use of these concepts (see Figure 6.10). After defining the problem and understanding its background, goals and wishes are generated. Usually the client will be asked to select one goal or problem to work on first. Then ideas are generated to meet the selected goal. For example, the goal might be to develop an office copier which reuses paper or "to make copies without paper."

Simple techniques such as each participant listing one "real" and one "fantasy" idea can be used. More formal techniques based on the use of mental excursions, personal involvement, and metaphors can also be employed. Table 6.2 lists a number of specific idea-enhancing techniques. See Prince (1972) for more details. After a large number of ideas are generated, the client selects one for an itemized response. If the idea is made acceptable, it is called a "possible solution" and specific actions are outlined to implement it.

A usual session runs for three days, during which the basic flow is repeated many times. The group is usually comprised of personnel from the innovating organization, but consumer groups have also been used to create product ideas.

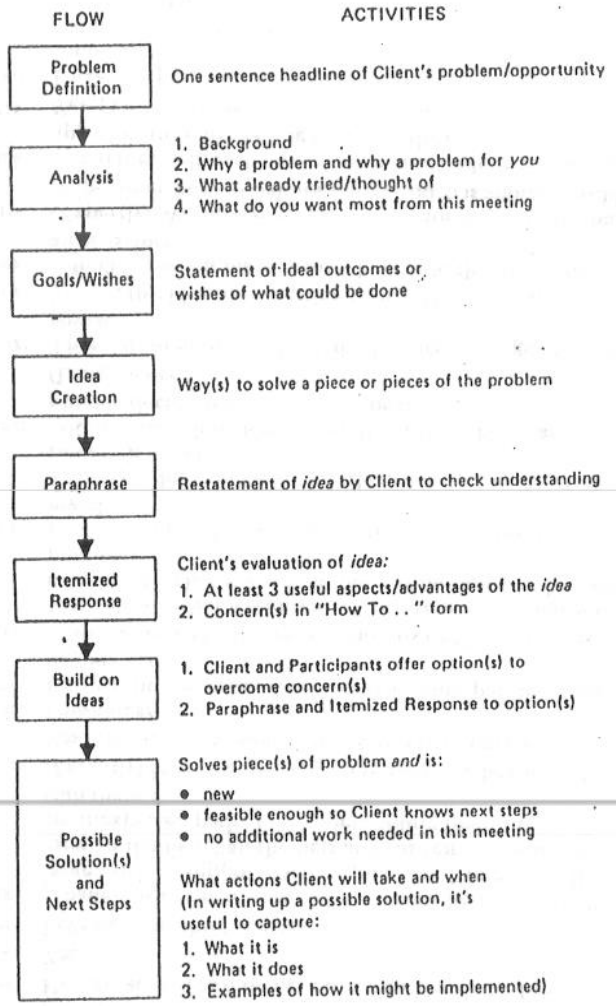

FLOW
ACTIVITIES
Problem Definition
One sentence headline of Client's problem/opportunity
Analysis
1. Background
2. Why a problem and why a problem for *you*
3. What already tried/thought of
4. What do you want most from this meeting
Goals/Wishes
Statement of ideal outcomes or wishes of what could be done
Idea Creation
Way(s) to solve a piece or pieces of the problem
Paraphrase
Restatement of *idea* by Client to check understanding
Itemized Response
Client's evaluation of *idea:*
1. At least 3 useful aspects/advantages of the *idea*
2. Concern(s) in "How To . . " form
Build on Ideas
1. Client and Participants offer option(s) to overcome concern(s)
2. Paraphrase and Itemized Response to option(s)
Possible Solution(s) and Next Steps
Solves piece(s) of problem *and* is:
• new
• feasible enough so Client knows next steps
• no additional work needed in this meeting
What actions Client will take and when (In writing up a possible solution, it's useful to capture:
1. What it is
2. What it does
3. Examples of how it might be implemented)

Figure 6.10. *Flow of a Synetics Meeting (reproduced with permission of Synetics Inc., Cambridge, MA; Synetics is a registered trademark of Synetics Inc.)*

One remarkable feature of a creative group session is its ability to integrate marketing, R&D, engineering, and production points of view. We have found it useful to frame a problem in some sessions based on market research studies. For example, considering the market definition findings of Chapter 5, the organization may define an opportunity as a regular instant coffee with improved mildness and aroma. The problem would then be to feasibly create such a product. In other sessions a technical issue may be the problem. For example, with digital watches the problem may be "how to use the electronic technology to create a watch that tells time and reads blood pressure." Combining a diverse group of people in a meeting and integrating basic technical and marketing research can facilitate creation of major new ideas for innovative products that meet market needs.

ble 6.2. **Some Formal Techniques from Synectics**

Technique	*Description*
ersonal Analogy	Participant puts himself in the place of a physical object, e.g., a tuning fork, and gives a first person description of what it feels like to be that object.
ook Title	Participant gives a two-word phrase that captures the essence and the paradox involved in a particular thing or set of feelings, e.g., familiar surprise.
xample Excursion	Group discusses a topic seemingly unrelated to the basic problem in order to trigger thoughts and/or "take a vacation" from the problem.
orce Fit — Get Fired	Participant thinks of an idea to force together two or more components of an idea. In the get-fired technique, the idea is to be so wild that his boss will fire him.

These concepts of a creative group may seem abstract and hard to implement. Below is an edited transcript from an actual session that was used to develop a new service (Prince, 1972, pp. 145–147). Examine this transcript for the four concepts outlined above. You may wish to imagine yourself as either the client or a participant.

Problem as Given: How can we provide more diagnostic service with no more doctors?

Analysis: A large Boston hospital offers a 24-hour diagnostic service for emotionally disturbed people. This clinic examines patients and prescribes a course of therapy. Patient load is increasing 50 percent a year but the number of doctors remains the same. How can this service be continued with no more doctors or money?

Problems as Understood: (1) How can one doctor be in three places at once? (2) How can patients be spaced throughout 24 hours?

Leader:	Let's take number 1. In the world of nature, can you give me an example of being in three places at once?
Liz:	Perfume.
Leader:	Yes?
Liz:	If you wear a distinctive perfume and go from one room to another you remain present in each room.

Leader: I think I see—you leave a trace or representation of yourself in each room?

Liz: Yes.

Dick: A fisherman's nets.

Leader: Go ahead.

Dick: I was thinking of a Japanese fisherman for some reason. He leaves one net in one place, another in another, and then collects them with the fish.

Leader: His nets act just as if he were there and catch the fish?

Dick: Yes.

Leader: Let's examine this fisherman's nets.

Dick: Japanese fishermen have to be efficient because they depend on a large catch to support their population. (Note: Dick is more interested in the fish than the nets and his remarks lead the team down an unexpected path. The leader, noting their interest, happily goes with them.)

Morris: (Expertly) Some fish are considered great delicacies in Japan.

Peter: Yes, what is that poisonous fish that is so popular?

Morris: Poisonous?

Dick: I forget the name, but it has one poisonous part or a spot that has to be removed.

Liz: Who removes it? The person who eats it? I'd be nervous.

Dick: I am not sure, but it seems to me you remove it when you are eating it. In the article I saw it said that it is not unusual for people to get poisoned.

Peter: I would want to know all about that poison spot so I could protect myself.

Liz: You are right. I wouldn't trust the fisherman or the chef. I'd want to remove it myself.

Leader: OK, let's take these ideas about the fish . . . How can we use them to put one doctor in three places at once?
(Long silence.)

Liz: There is something about do-it-yourself . . . get that poison out yourself.

Leader: Yes . . . this idea of protecting yourself? Can we help . . .

Peter: I don't know if it makes sense, but could the doctor use a patient as an assistant?

Morris: (Expertly) We sure have plenty of patients and they have time to help—some have to wait for hours, which is another problem.

Dick: Could they help each other? Some kind of do-it-yourself group therapy while they are waiting to see the doctor?

Dick: Yes. (To Morris, the expert): Could you?

Morris: I like the part about the patients getting some benefit while they wait—even if some just listened it would probably be reassuring. But, I am a little concerned about their working without supervision.

Liz: Could a nurse work with them, and perhaps get the history of the next one to see the doctor or something?

Peter: Or could the patient just finished take the history of the next one due to see the doctor?

Morris: If we push this thought to the end, we have a floating group-therapy session where everyone takes everyone else's history. We would want a doctor there.

This was the viewpoint. After experiments in the clinic the concept has evolved into a free-form meeting in the waiting room. The doctor presides. He and the group concentrate on helping one patient plan his own course of therapy. The doctor keeps an eye out for patients who are disturbed by the openness. Anyone who prefers can have a private interview. Most prefer the group treatment and find this waiting-room experience rewarding.

As the example indicates, an idea has its roots in many places—in this case in Dick's interest in the Japanese fishermen, in Peter's casual knowledge of Japanese delicacies, and in Liz's concern about trusting an important task to a chef or fisherman. Not all sessions will go this well and even this example is an edited transcript, but the openness, participation, teamwork, encouragement, and focus of creative group methods can lead to potential new product ideas that might not be recognized otherwise.

There have been some studies that indicate individual creative effort is superior to groups in terms of the quantity of ideas generated (see Lewis, Sadosky, and Connolly, 1975; and Bouchard and Hare, 1970). These studies are based on brainstorming and not the more advanced methods which stress the quality rather than the quantity of ideas. This area deserves more research, but one should not underrate individual effort as a component in the creative process.

In our experience, creative group methods have provided a useful tool for an organization to synthesize the diverse information obtained from direct search, exploratory consumer studies, technology forecasting, and consumer engineering, and convert this information into potential new product ideas. Whether group methods or individual efforts are used, an organization should expend energy to tap its idea sources and generate a sizable number of exciting yet diverse ideas.

IDEA MANAGEMENT

If an organization's idea generation efforts are successful, many exciting ideas are generated. Some may be the key ideas for a new product, but most of the remaining ideas will not have sufficient potential for further investigation. If each idea were advanced to the design phase costs would be prohibitive, thus we return to a managerial process to screen the ideas. Since the entire new product development process allows iteration, we select a small set of ideas based on the limited amount of information that is available for idea screening. This small set of ideas is advanced to the design phase to be analyzed in detail. Enough ideas are advanced so that it is likely that at least one is developed into an actual new product strategy. If none are successful, an organization returns to idea generation and iterates the process.

The two key managerial concepts in screening ideas are: (1) the selection process and (2) how many ideas to advance to the design phase.

Idea Selection

In setting up an idea selection process, an organization should consider information availability, the position of idea selection in the development process, and issues of intra-organizational conflict. Idea selection comes early in the development process—it is not a final strategy selection. Detailed information is not normally available and accurate estimation of financial outcomes is not always feasible. Finally there are usually a number of human aspects reflected in the varying goals of R&D, marketing, production, distribution, and top management. For these reasons, most organizations should choose a relatively simple idea selection process tailored to their own unique needs. While more complex processes may be appropriate after the design or testing phases, few organizations use such processes early in idea selection. Rather they choose a process that requires inputs that are feasible to obtain, that is appropriate for early screening, and that is flexible enough to allow the judgmental resolution of conflicting interests.

One simple approach to finding the best ideas is to apply the same procedure to each idea that was proposed for screening markets. In Chapter 5 we described "market profile analysis." The analogy for ideas is called "product profile analysis." When applied to products the scales may be more refined and some new scales added. For example, specific scales on the probability of commercial success or the probability of successful technical development could be added. Individual cost scales such as development or production costs are useful. These scales and the ratings of the ideas by managers is a good way to be sure all aspects of each idea have been considered. This checklist function is important since, while idea generation is creative outburst, this must now be tempered by a disciplined look at the feasibility and reward potential of each idea.

Product profile analysis can often be coupled with project selection indices. R&D management has specified and tested such procedures to select projects. Examining these methods and experience yields insights that are useful in not only R&D project selection, but in prioritizing ideas. The most basic procedure is to divide the expected return by the development cost:

$$I = \frac{T \times C \times P}{D} \qquad (6.1)$$

where I = index of attractiveness

T = probability of successful technical development

C = probability of commercial success given that it is technically successful

P = profit if successful

D = cost of development

If an idea is already feasible, the probability of technical success (T) will be high and the cost of development low (D). For the same profitability (P) and chance of commercial success (C), this project would be preferred to an idea that requires a technological breakthrough (low T and high D). This simple formula is one way of trading off the different risks, return, and levels of knowledge of various ideas. After the index I is calculated for each project, they are ranked and the projects with the highest I are funded.

Many more complex models of project selection have been developed (Roberts, 1974; Pessemier, 1966; Baker, 1974; Baker et al., 1976). Baker and Pound (1964) list over 80 methods based on various operations research techniques. However, few of these advanced techniques are used; Baker and Pound found only 6 of 35 firms they surveyed used them. Even the basic model in equation (6.1) is used with caution due to the difficulty in accurately estimating costs and probabilities. Meadows (1968) studied five firms (three chemical labs, one electronics lab, and one equipment manufacturer) and found that the correlation of actual to estimated cost was only 0.5. The ratio of actual to estimated cost varied from 4.25 to 0.96 over the labs. Marshall and Meckling (1962) found a ratio of 1.78 in ethical drugs and 2.11 in proprietary drugs, while Norris (1971) found the ratio varied from 1.5 to 0.97 for industrial products in England. It is apparently difficult to accurately estimate the cost of an R&D project. In addition to the uncertainty of estimation, Mansfield et al. (1971, p. 213) feel that inaccuracies also stem from "deliberate underestimations" used to marshal support for a project. In studying the discrepancies, Meadows found the ratio of actual to estimated costs to be greater for project failures than for successes. One explanation may be the tendency not to give up on a project and to continue to allocate funds to it even when success seems unlikely. While costs are difficult to estimate, probabilities are even more difficult. Meadows found almost no correlation between the estimated probabilities of technical or commercial success and the observed fractions of success. Furthermore Rubenstein and Schroder (1977) found that personal, organizational, and situational variables can have major impacts on estimated probabilities. For example, project originators and those with implementation responsibility tended to give more optimistic estimates than the average while those with a "knowledge gap" about technical feasibility tended to give more pessimistic estimates.

These difficulties in cost and probability estimates suggest simplicity in the screening process because a more complex process would tend to hide the inaccuracies in these estimates. Furthermore those potential inaccuracies suggest that any estimates be treated with extreme caution and that steps be taken to minimize organizational bias on the costs and probabilities.

However, these cautions do not diminish the need for some formal process to screen ideas. Such a process allows a critical look at the many aspects of the alternative ideas as they relate to new product development. Furthermore it seems to foster dialogue among the disparate interest groups involved. It seems reasonable to consider costs and probabilities, but not to use a rigid formula to select ideas. We recommend the use of these factors as part of a product profile analysis. The profile analysis should serve as a checklist and a guide to managerial discussion and decision making. The primary goal of such a formal screening process should be to eliminate poor ideas and select for further consideration what appear to be the best ideas.

Number of Ideas

How many ideas should be identified for design work? It is reasonable to assume that there are "good" ideas and "bad" ideas, with their distribution as shown in Figure 6.11.

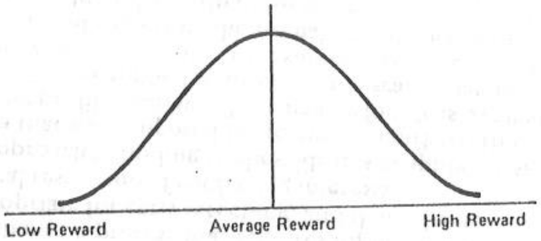


Figure 6.11. *Distribution of Potential Rewards for Ideas*

If we consider generating an idea as making a random draw from the normal distribution of Figure 6.11 and we generate only one idea each time we develop a product, we will get an average expected reward. If we could generate two independent ideas and select the "best" one, the expected value would be substantially greater. As more ideas are generated for a development opportunity, the expected reward increases. The overall gain depends on how many ideas are sampled, the variance in the distribution of ideas, the reliability and validity of our methods of finding the "best" idea, and the costs of generating ideas. (See Marschak, Glennan, and Summers, 1967, pp. 13–48; and Chapter 13 for more detail.)

In almost all cases, the rewards of generating several ideas are greater than the costs. We strongly suggest generating alternative ideas and not becoming committed to one idea alone. A common pitfall in new products is selecting the first idea and allocating large amounts of resources to it without considering alternatives that may be better.

The first idea may not reflect a major innovation in the market. It is important to allocate substantial creative attention to developing products that revolutionize markets. These may revise the structure of the markets by adding new dimensions to product performance or by creating new market segments. In order to find these major innovations the product market must be stimulated by major new idea concepts or prototypes. Consumer perceptions must be "stretched" to determine the potential of new dimensions and technologically challenged by ideas that may meet new major market needs. The examples of watches shown in Figure 6.9 stretch the market and technology. Watches that report pulse rate and blood pressure would represent new health dimensions for the product. The examples in Figure 1.3 describe the new product idea by concept statements so that consumers can evaluate the ideas. We term these revolutionary ideas "stretchers." They represent new market and technical options. Many of the stretchers will not find market acceptance, but they may lead to understanding of major new opportunities in the market.

Both the statistical considerations and the strategic notion of stretchers suggest the need to consider alternatives. The organization should use their screening process to select three, four, or more high-potential stretching ideas. These ideas should be innovative and try to cover the spectrum of potential in the selected market.

SUMMARY

The creation of major innovations and product ideas completes the opportunity identification phase of the new product development process.

This opportunity identification begins with market definition. A large number of markets are identified with characteristics compatible with the organization. These are screened via market profile analysis to identify a high potential set for further analysis. More detailed information is gathered and the competitive structure of each market is hierarchically modeled. Target groups are specified through market segmentation. Finally these alternatives are carefully examined to select a portfolio of "markets" of attractive risk/return characteristics and to select the best initial, competitive definition for that market.

Given the market definition and target group, the organization then develops ideas for products to take advantage of the identified opportunities. A large number of ideas are generated through direct search, exploratory consumer studies, facilitating user innovation, technological forecasting, consumer engineering, and creative group methods. Emphasis is on breadth and creativity since alternatives enhance the chances for success and the greatest success often comes from the most innovative ideas. Finally, a relatively simple screening process is used to select a few good ideas from those generated. These three or four innovative ideas represented by stretcher concepts or product prototypes, as well as the market definition and target group segmentation, are then the initial inputs to the design phase. Since the market was chosen because of its strategic growth and profit potential and the ideas were created to meet specific needs in this market, the opportunity defined by the set of ideas should be significant.

The next step in the new product development process is to physically and psychologically design the product to exploit the market opportunity. By management's use of measurement and models to understand consumer response and R&D and engineering skills, a final design is created. This design is then tested and, if successful, introduced.

REVIEW QUESTIONS

6.1 Why is idea generation important?

6.2 Investigate two recent and possibly significant technological advances. For each, generate three new product ideas for three different consumer needs.

6.3 Select three of the methods of generating new product ideas that were discussed in the chapter. For each method,
  a. Discuss the role of communication among individuals involved.
  b. Discuss the costs of employing the method.
  c. State which industries would find the method most valuable and why.
  d. Describe the generation of a hypothetical product when employing the method.

6.4 What are the advantages and disadvantages of creative groups?

6.5 The following table illustrates managerial judgments on the probability of successful technical development of an idea (T), the probability of commercial success given that it is technically successful (C), the profit if successful (P) and the estimated cost of development (D).

Idea	*T*	*C*	*P*	*D*
A	.7 to .9	.2 to .4	1.1 to 1.3	.1 to .9
B	.1 to .3	.7	2.2 to 2.5	1.2 to 1.9
C	.8	.4	1.3 to 1.4	.3 to .4
D	.4 to .5	.5 to .9	.1 to 2.2	.1 to 2
E	.2	.7	3.3 to 3.4	3.0
F	.6	.6	1.3 to 1.4	.9

  a. Compute the index of attractiveness for each idea.
  b. For each idea, discuss what information the index captures and what information the index ignores.
  c. What product ideas does the index dismiss as inferior? Would you dismiss those ideas?
  d. Where should managerial effort be directed when attempting idea selection?

6.6 Suppose a single individual working alone would generate ideas of similar quality. Would it be more valuable for a single individual to generate 10 separate ideas or for 10 individuals to each generate one idea?

6.7 Suppose 10 individuals working alone would come up with 10 very different ideas. However, 10 individuals working together would generate 10 similar ideas but of better average quality. Should the individuals work apart or together?

6.8 How might a hospital supply firm encourage users to innovate? How might the hospital supply firm set up an information network to discover and use these innovations?

6.9 Develop two stretcher concepts for urban transportation service.

6.10 Develop two stretcher concepts for a warehouse heating system.

6.11 What are the advantages and disadvantages of focus groups? How do focus groups provide new product ideas?

6.12 Use consumer engineering to develop ideas for a new home information system.

6.13 Do a direct search of idea sources for a new automobile accessory.

6.14 What is the role of gatekeepers in idea generation? How can this role be encouraged?

chapter 5

Sources of Venture Ideas

The most precious of the five key venture ingredients described in the last chapter is a high-margin venture idea. Most would-be entrepreneurs have at least some of the other four ingredients all the time, and it is when the venture idea occurs that the others are brought into action. Even if all the others are missing, they can generally be obtained if the venture idea has sufficient margin promise. So it is worth looking for.

Seeking a good venture idea is almost never a straightforward task. Most who find one do so rather inadvertently, and many of those who deliberately search for them fail. Many have driven themselves partly or entirely to ruin seeking and testing venture ideas that did not work out. Even so creative a person as Mark Twain spent much of his time and fortune without success trying unworkable ideas. Hence, how good venture ideas can be found is a topic particularly worth study.

This chapter will show through examples where successful venture ideas tend to come from. From these as well as examples in other chapters it can be seen that most emerge rather unexpectedly and are not the result of either methodical searching or brilliant discovery. A number of ways of looking for good venture ideas that have been advocated by various authors will be summarized, and suggestions about how a would-be entrepreneur may be able to increase the odds of his or her encountering promising venture ideas will be developed.

WHARTON REPROGRAPHICS

INVITATION AS A VENTURE IDEA SOURCE

Sometimes the idea for a particular venture comes "out of the blue" in the form of a proposal by someone else who has seen an opportunity and wants to collaborate in exploiting it. If the entrepreneur is defined as the person who carries through the actions required to start up the business, as opposed to the one who suggests the idea of doing so, then to the entrepreneur the venture idea comes in the form of an invitation, usually quite unanticipated, to take charge of the startup. In the following example from Collins and Moore the venture was offered in the form of a job, but the entrepreneur chose to make it a startup instead.[1]

> A young man skilled in light manufacturing was approached by a delegation of creditors of a failing business. They offered him a salary to take over the company, but after checking out the company the young man decided the firm was too far gone. Instead, he recommended forming a new firm to buy the assets and start over.

In another case that they describe the decision had already been made by four men to create a new company.[2] They regarded it as an investment, but none of them had time to run it. Consequently, they approached an entrepreneur, curiously enough one who had already gone bankrupt in one company and had been squeezed out of another before taking a job as sales director in a large company. They asked him to take charge of the startup. He agreed to do so if he could be paid partly in stock, since he had no money to invest. This was done, and the company succeeded. In a third case Collins and Moore describe the story of a professor who was approached by an employee of a large corporation for which he had done consulting work with the suggestion that he start a new company.[3] The authors' impression is that the professor was "dragged into entrepreneurship by his heels" in forming this company, because initially he was reluctant to do so, having already established himself solidly in an academic career. They also note that several of the large-company employees invested in the venture and that it obtained process rights from the large company "at a ridiculously low figure," an implication perhaps of skulduggery.

A similar reluctance appears in the story of a more recent startup in high technology described by Goodrich.[4] He quotes the entrepreneur, Sanford D. Greenberg as follows:

> When I had been at Systems Development Corporation for six months one of the partners of White, Weld and Company, the Wall Street investment banking firm, came to me with a very attractive offer, which ultimately resulted in the founding of my company, EDP. I had met him when I was working on compressed speech. White, Weld became interested in that and wanted to back me, but I suggested that we wait and work together on something else in the future. When White, Weld approached me again they asked if I would be interested in planning, setting up, and running a computer firm. They put up some of the original investment of two million dollars; some money also came from a group headed by William Rosenwald, a New York investor. EDP was founded in early 1968, in a small office in Washington. The original staff was two people—myself and a colleague.

How does a would-be entrepreneur become "invited" to pursue a particular venture idea by someone else? Perhaps the best way to explore the question is from the viewpoint of the other person. Who would be the best person to invite? Someone who is handy? Perhaps. No searching for new acquaintances as candidate entrepreneurs was apparent on the part of those who offered the venture ideas in the preceding examples. Someone who is searching for ventures? Apparently not. None of the preceding four entrepreneurs seems to have done so, and at least two were outright reluctant. Thus it is hard to infer strategic guidelines for being invited to participate in a venture beyond cultivating contacts who might conceivably make such an invitation and seeking to perform in a way that would make them want to collaborate.

VENTURE IDEAS FROM PRIOR EMPLOYMENT

Most venture ideas come from former jobs held by the entrepreneurs. As mentioned earlier, Cooper found in 85 percent of his high-technology startups that the products of the new companies were similar to those of prior employers of the founders.[5] In all of the high-technology startups reported by Bylinsky this appears to have been the case. In about 20 percent of the startups reported by Collins and Moore it appears the entrepreneurs simply restarted companies of former employers who had run into trouble, while in most of the other startups they report—although sometimes a shortage of data makes it difficult to tell—it appears the entrepreneurs pursued lines of work very similar to prior employment.[6] In the ventures reported by Miller it appears that around 75 percent bore close resemblance to prior employment, while in those of Armour the figure appears to have been 66 percent and for those of Lynn around 50 percent.[7]

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[1] Collins and Moore, *Organization Makers,* p. 125.

[2] Collins and Moore, *Organization Makers,* p. 126.

[3] Collins and Moore, *Organization Makers,* p. 124.

[4] David L. Goodrich, *Horatio Alger Is Alive and Well and Living in America* (New York: Cowles, 1971), p. 186.

[5] Arnold C. Cooper, *The Founding of Technologically-Based Firms* (Milwaukee: Center for Venture Management, 1971).

[6] Collins and Moore, *Organization Makers.*

[7] Harry Miller, *The Way of Enterprise* (London: Deutsch, 1963).

When the entrepreneurs in those books above did depart from prior work experience, it usually happened via one of two routes, each of which accounted for roughly half of those departures. One was to enter the venture by means of acquiring a going concern rather than starting a new one. The second was to start a company in a rather prosaic line of work such as rentals, turkey raising, hamburger stand operation, travel tours, body and fender repairs, and the like. One other route used for departure, but very infrequently among the examples of these authors, was that of teaming up with someone whose prior work was aligned with that of the new venture or bringing in such a person as partner.

In the ventures closely linked to prior work, there did not appear to have been much need for search to find the venture idea. Dan Lasater, after learning the hamburger business as a McDonald's employee as described in the preceding chapter, recruited a partner for capital and set up a hamburger stand. Berry Lind worked as a commodities broker, then bought a seat on the commodities exchange to start his own firm, as did Donaldson, Lufkin, and Jenrette in stock brokerage. Ross Perot sold computers and hit upon the idea of selling computer services with a company of his own, as did Sam Wyly. Thus thanks to prior employment it appears that thinking of a venture idea did not require any great imaginative leap, although in fairness to the entrepreneurs it should be noted that many others also working in their lines of business presumably also could have done the same but did not.

Why prior jobs are the most common source of venture ideas is not hard to imagine. Those are the activities in which the entrepreneurs have become professional and have developed sufficient competence to compete with other firms. This competition has put them close to the frontier of knowhow of the products and services involved, their shortcomings, and how they are changing. They know who the customers and suppliers are, and how the business is done. They should also have some feel for costs in their particular lines of work, the significance of location, quality control, sources of labor, regulations that may apply, and so forth. An example of one who acquired such expertise and then moved into competition with his former employer was a man who went to work for a company that manufactured pipe threading machines for plumbers.

> He was not planning to start his own company when he first signed on as a salesman. "I just wanted to do a good job and get ahead," he recalled. What he was supposed to do was call on distributors of plumbing equipment, demonstrate how the machine would cut and thread pipe, and try to persuade them to stock the machine and sell it to plumbing firms. This sounded simple enough, but when he actually tried to work the machine he found it was not all that easy to run it properly.
>
> "My first couple of tries made it obvious that I had some learning to do," he said. "I figured that to make anyone want to buy it I ought to become so skilled and smooth at whipping pipe through it that the whole process would look as easy as tying shoes." He took one of the machines home and mounted it beside his garage, bought a load of pipe, cut it into a large number of pieces and started threading. At first it was slow. Pipe would stick in the chuck. Threads would have trouble starting or run too far. The switch was awkward, and it was hard to set the adjustments properly on the machine. But gradually as he practiced hour after hour, his skill increased and he was able to turn out threads with smoothness, ease, and flourish. His efforts at selling the machines also went well.
>
> But another thing he had not counted upon also happened. He began to get ideas for improvement of the machine's design. Intrigued with these new insights, he refined his design ideas as he learned more from customers about their preferences. Drawing on these ideas, he designed a new machine with substantially improved appearance and performance. This became the product of his own company, which ultimately prospered and made him a wealthy man.

This man's particular line of work clearly gave him advantageous knowhow. First were technical details of the *product*, including the kinds of weaknesses it had which allowed entry with a better design. With these he also became closely acquainted with strengths and weaknesses of *competitive units* on the market, so he had intimate knowledge of the *state of the art* in such equipment. Part of this knowledge was an understanding of who *customers* were, what they wanted, and why they would make the decision to buy a particular unit. Finally, he developed personal *power to sell* such products. By the time he was ready to launch his own company, he had already developed a very strong capability to compete in this particular line of work. As part of the argument for obtaining such specialized experience prior to startup, it can also be noted he had not become especially equipped to enter any other line of business.

The nature of the product is also significant. It was one that allowed significant technical improvements, unlike heating oil or nails, which tend to be stable commodities. It was one that customers could evaluate for themselves, unlike paint or tires, which are harder to judge and may, therefore be bought more on establishment of a brand over many years. The product was within the capacity of one man with modest resources to design, as opposed to an executive jet or a power generating station, which would require many experts and much capital.

The combination of characteristics that gave advantages to this job as a venture idea source is only one of a vast number of combinations, many others of which can also be effective. A different pattern, for instance, is illustrated by an example from Murphy.[8]

> When George Moore of Washington, D.C., was separated from the Air Force, he took a position with Ford Motor Company and was put in an intensive indoctrination course. Part of the cycle was spent with Ford dealers, and in the dealerships Moore saw his opportunity. "For years," he says, "I wanted a business of my own. What really decided me was the indoctrination course. The dealer's independence appealed to me."

[8] Thomas P. Murphy, *A Business of Your Own* (New York: McGraw-Hill, 1956), p. 48.

> Moore, then twenty-six and making $12,000 a year, asked friends to assign him a Lincoln-Mercury dealership, then researched to find the best city among those available, and finally borrowed money to open in Washington. Moore-Grear Management Service grew to own three dealerships and manage six others. It gave George Moore considerable independence. At the time Murphy described his net worth was over a half-million dollars.

Unlike the previous entrepreneur with the pipe threading machine, Moore dealt with a service rather than a product, and he did not create anything new beyond "another" dealership. But it was his prior job that gave him the idea and the opportunity, as well as "friends," presumably with the motor company for which he worked, who could "assign" him a dealership. Finally, his new company did not compete with his former employer, as did that of the previous entrepreneur, a difference that can sometimes be very important.

Legal Constraints

When a new venture competes directly with a prior employer, the startup, especially if performed by an engineer or scientist of the prior employer, which the pipe threading machine entrepreneur fortunately was not, can be stickier in a legal sense. Cooper learned this in his study of technical startups and observed:

> In my research, the one question that always touched a raw nerve was when I began to ask them how similar they were to the businesses they had just left. I found it very hard to get straight answers.[9]

Obligations and rights between employers and employees concerning ideas emerging from employment are a somewhat muddy area legally. In general, the law says a person has the right to employ skills and knowledge to earn a living, but at the same time an employer has the right to protect property fairly paid for, including information employees may be aware of. It has been held, for instance, that an employee cannot keep from his employer information of value to his employer's business and then go start a company to use that information in competition with his employer. A real estate agent, for example, who had learned of a sales opportunity could not keep the information to himself rather than sharing it with the firm he worked for, start his own firm, and make the deal.

It would not be legal while on an employer's payroll to organize his employees to leave and start another company in competition with that employer. It is all right to plan a new business, but not to "cheat" on an employer to facilitate it. What would constitute cheating is something courts might have to decide in specific cases, but in general it is recognized that responsibilities and loyalty should go both ways between employers and employees. Sharing information with each other is one aspect; use or misuse of a position of advantage is another. Three others that deserve attention concern (1) trade secrets, (2) solicitation of former employers' customers, and (3) inventions and noncompetition agreements.

A trade secret is commonly defined as any formula, pattern, device or compilation of information which is used in one's business and which gives him an opportunity to obtain an advantage over competitors who do not know or use it. There are many qualifications that may enter into defining it further; it must be something not generally known, and not easy to figure out or obtain. The employer must indicate its secretness and make efforts to keep it secret, and the violation of it must do some damage to the employer competitively. One precaution an employer (and later perhaps the entrepreneur too) can take is to have employees sign an agreement such as:

> I will regard and preserve as confidential all trade secrets pertaining to the company's business that have been or may be obtained by me by reason of employment. I will not, without written authority from the company to do so, use for my own benefit or purposes, nor disclose to others, either during my employment or thereafter, except as required in the line of my employment with the company, any trade secret or confidential information connected with the business or developments of the company's specifications, drawings, blueprints, reproductions, or other documents or things.

There need not be such a written document for the company to be able to stop a former employee from developing a new business to utilize trade secrets. At the same time, there are many things an employee may learn on the job that can be used for starting a new business. Any general skills learned at the company, for example, can be used for earning a living, and also general knowledge. The salesman mentioned earlier, who came up with a better pipe threader, could not be prevented from doing so by his former employer. In another case, a chemist who worked for a wax company and developed some new products was sued by the wax company to prevent him from selling those products. The suit failed when the court found that:

> There is nothing in the record to indicate that the formulas in issue were specific projects of great concern and concentration by Buckingham [the wax company]; instead it appears they were merely the result of Greenberg's [the chemist] routine work of changing and modifying formulas derived from competitors. Since there was no experimentation or research, the developments by change and modification were fruits of Greenberg's own skill as a chemist without any appreciable assistance by way of information or great expense or supervision by Buckingham, outside of the normal expenses of his job.[10]

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[9] Arnold C. Cooper and John L. Komives, *Technical Entrepreneurship, A Symposium* (Milwaukee Wis.: Center for Venture Management, 1972), p. 162.j

[10] Wexler et al., trading as Buckingham Wax Company, v. Greenberg et al., Pennsylvania Supreme Court, 1960, U.S. Patent Quarterly, Vol. 125, p. 471.

Using customers of a former employer can also be a touchy area. If they are just personal friends, there is no problem. If they approach the former employee's new company and ask to buy from it, there is no problem. And it is legal for the former employee to make a general announcement of having quit the former employer and formed a new company in the same line of business. But if the former employee takes along a list of customers from the former employer, that may be regarded as stealing a trade secret. Or if the former employee goes out and solicits orders from customers of the old employer, using knowledge of those customers that is regarded as proprietary by the former employer, then there can be basis for a suit.

Inventions are another area that can prove troublesome for entrepreneurs, and it is fairly common for employers to require an agreement such as:

> The employee agrees to disclose promptly to the employer in accordance with his employer's procedures all inventions conceived by employee, whether solely or with others, during employee's employment by employer, whether or not during regular working hours, which relate to any subject matter with which employee's work with employer is or may be concerned or which relate to business carried on by employer.

All sorts of variations of such a contract are possible, and it is, therefore, important to read with care the one being signed. For instance, some cover only inventions related to the business of the employer, whereas others may seek to cover any inventions at all. If there is no such written agreement, then both the employer and employee have in effect royalty-free licenses to use whatever is invented. If there is such a written agreement, then the employer has the upper hand, though it is still not unusual, as will be illustrated shortly, for employers to grant rights of use to employees, particularly with regard to uses that the employer is not interested in exploiting, possibly because they lie outside the corporate strategic focus. If, in addition to having such an agreement, the employer is able to obtain a patent, trademark, or copyright on the product or service, then clearly the employer's hand is still stronger in determining what the employee might be able to do with it in developing a new business.

Another type of agreement that can be important in seeking to develop a new business around a job-inspired idea is the noncompetitive agreement. Under such an agreement the employee agrees in return for something, such as a job, not to leave and enter competition with his former company, possibly in certain carefully defined lines of work, within a certain geographic radius, and for a specified length of time. One way to learn a business, for instance, is to become a franchisee. The franchise firm as part of the deal will often train the franchisee in its way of doing business, which presumably will be a fairly well-proven formula for nonfailure, if not success. Another part of the deal, however, may be a noncompetitive agreement to prevent the franchisee from learning the system from the franchisor and then using that knowhow to go off on his own in competition.

Thus there are a number of legal pitfalls that can be associated with starting a new company around an employment-inspired idea. The fact that these pitfalls are real is attested to by the number of lawsuits against new companies which are brought by former employers of their founders. These suits may end up with the entrepreneurs being effectively prevented from continuing in business if the disputed product or service is key to their venture's survival and the court enjoins them from offering it to the market. If the former employer is able to prove injury, they may even be compelled to make restitution. More often, however, the decree will simply be that the new firm must pay some kind of royalty on business done. Combined with legal expenses of the contest, this may still kill the new business.

Most employment-inspired new ventures do not encounter such legal difficulties. They may proceed on a tack not in competition with the former employer. Or they may represent too small a competitive threat for the employer to spend legal service money squabbling about. Even if they do represent such a competitive threat, they are legally safe if (1) the product or service ideas taken from the former employer were not patented, and (2) how to make the product or service can be determined from examination of it in its finished form by anyone reasonably skilled in that sort of manufacture (i.e., it is not a trade secret), and (3) the employee did not sign a noncompetitive agreement. Finally, the entrepreneur may be able to insure safety by obtaining permission to proceed with a new firm around the product or service from the former employer. A variety of such factors were explored by one new firm, which finally succeeded, as follows.

> An electronics engineer working in a small electromechanical controls company became interested in developing a special-purpose limit switch for which a customer of the company had expressed desire. As required by his invention agreement with the company, he disclosed the customer's desire and a proposed design he had developed, but the company declined to have him work on it further.
>
> He quit to pursue the work on his own, and a month later as the result of a chance meeting at a dinner party went into partnership with a second electronics engineer, who had been laid off at another company. With customer orders in hand from the outset, the two men engaged a patent attorney to tie up rights on the device, and they and their two wives worked at assembly in the recreation rooms of their homes. A month after shaking hands on the partnership, the men hired another lawyer to begin the process of incorporation, and a CPA firm to set up books. Since financing was entirely from their modest personal savings, the expenses of these professional services were felt heavily, but in retrospect they agreed no money they ever spent had been better justified.
>
> It soon developed that the former employer of the first entrepreneur had misgivings about their obtaining a patent on the product that had been originally

> conceived on his payroll, and a lawsuit was threatened. The patent attorney for the new company recommended that rather than attempt to obtain a patent with the search information he had gathered they should instead build an argument that the device was not such that it could be patented. The former employer acquiesced to this argument. The entrepreneurs proceeded to design and encapsulate the device in such a way that for someone else to disassemble the switch it had to be practically demolished, hence virtually impossible to study and copy. With that protection the company proceeded and prospered.

It should be apparent from this brief discussion that legal aspects of employer-employee responsibilities regarding product and service ideas can be very intricate. The moral underscored by the last example is that a competent lawyer should be asked for advice on any of these matters that may apply to a particular entrepreneurial venture.

OBTAINING RIGHTS

Acquisition of rights to produce and sell a product or service developed by others is a feasible way of obtaining a new venture idea. At least four sources of such rights are the entrepreneur's prior employer, other companies or organizations, independent inventors, and the government. Instances in which prior employers have allowed entrepreneurs to "make off" with product rights occur typically when the employer develops something that it does not want to put on the market, possibly because the employer is big and the market is small, or because the employer wants to concentrate its resources in one market area and the development applies to a different market area. Obviously, another time when companies choose to make rights available is when they are not willing to bet that the development truly has a market at all.

If the employer is a nonprofit organization, it may allow acquisition of rights as part of a strategy of deliberately not going into commercial business. A success story of this variety was the following.

> William Moog, Jr., after studying engineering and working on technical projects during World War II, took a job in late 1946 at Cornell Aeronautical Laboratory, where he invented a servo valve that the lab patented. There was at the time no commercial interest in the product, and none arose until 1950, when Bendix ordered four units. Moog was given a leave of absence from the laboratory to fill the order. The components were made by a job machine shop, after which Moog assembled them in his basement and tested them at the laboratory. While he was doing so, an order came from a Philco subcontractor for seventy-five more units. Obtaining from the laboratory a royalty-free license, Moog incorporated in July 1951 with $3000 of capital. To raise more capital he brought in other members of his management team who had capital to contribute. Break-even occurred the first year, which showed a profit of over 5 percent on sales of $126,000 as the company's fortunes rose on the tide of a growing aerospace industry.

Although other success stories in which the idea for a new venture was taken under license from a former employer can be found, they are much more rare than those founded around ideas from other sources mentioned in this chapter. It is also possible to find a comparable if not greater number of startups that failed after obtaining their ideas in this manner. Why this is so is a subject that has never been studied, but it seems plausible that a combination of factors including the following may account for it:

(1) The employee was involved with development of the idea and became enamored of it beyond justification.

(2) The employee was a researcher or design engineer unfamiliar with selling and tended to make unrealistic assumptions about what the customer's point of view would be.

(3) The employee was overly eager to leave the employer and enter independent business.

(4) The employer chose to let the idea go because it was not worth commercialization.

At the same time, it is easy to find success stories such as those mentioned earlier in which the employee took an idea without any rights deal and developed it into a new venture. As will be further discussed later, there are many examples in which an idea was successfully transferred from one company or geographical area to another after it had demonstrated its commercial effectiveness. But effective startups using *licensed ideas* for the first time in commerce are rare.

Even more rare are startups in which the rights were obtained from sources other than the former employer. This is not to say that not much licensing goes on. Many companies—a leading example being General Electric—have whole departments devoted to selling licenses, and there is a national organization called the Licensing Executives Society, which publishes a substantial periodical, attesting to the high level of activity in this way of doing business.

It is not hard to find examples of products manufactured under license. A familiar example, for instance, is the Wankel engine in automobiles and other applications. But it seldom occurs that new companies are started around licenses, perhaps because there are simply too many disparate pieces of circumstance that have to fit together to bring it about. The entrepreneur must simultaneously know about a customer's need and find the product or service to fit it in the possession of some company, individual, or government agency. At the same time, the possessor must either not be aware of that need or must not be interested in exploiting it. And the possessor must be convinced that the entrepreneur, who by definition of the startup process does not yet have a company, is in a good or better position to make the most of that product or service, to do a better job with it, and thereby to create more royalties for the licensor than any established company that might be interested in exploiting it under license.

Even established companies can find it difficult to prosper as licensees. Morrison estimates that losers outnumber winners in licensing deals by fifty to one, and observes:

> There are literally thousands of products, processes and special equipment described by the developers as "99 percent ready" to go into profitable production and sale, but somehow that remaining 1 percent never gets done. I have viewed some of these; and when I observed them again a year later, no further progress had been made. Moreover, the estimate of "99 percent ready" had frequently been revised to 90 percent or even 50 percent.[11]

Thus in summary of licensing as a way of obtaining venture startup ideas, it appears that if the license is obtained from a former employer by the employee who worked on the product or process, the odds of the venture's succeeding may be fair. But the odds of the entrepreneurs finding a good startup license at some other company, from an independent inventor, or from a government agency are very slim at best. The way this latter is most likely to work out is if the entrepreneur first independently discovers the startup idea, and then happens to learn that some other person or organization has already laid claim on it and goes to them for a license.

Teaming With Inventors

Notwithstanding the unencouraging record of licensing as a source of startup ideas, a somewhat similar approach has yielded many successful companies. This is when the entrepreneur joins forces with an inventor and together the two share in the startup. In the two such examples that follow two common characteristics at least are of note. One is that in each case the inventor had clearly demonstrated the existence of a need for the invention before the entrepreneur (or coentrepreneur) picked it up. They were not situations in which the inventor simply came up with something, hoped that there might be a need, and recruited the entrepreneur to work at fulfilling that hope. (Like one inventor who designed a new recreational game and offered a rights agreement to some business school students, who then went out trying to sell it and shortly failed.) Second, there was an effective complement of contribution between the inventor and his coentrepreneur.

> A prominent surgeon in 1940 became injured in the hand by X-rays and had to have it amputated. He bought an artificial arm but found it very unsatisfactory for holding implements such as eating utensils, pencils, and other hand-held items. He discussed the problem with his investment advisor, a man who, as it turned out, had been trained as an engineer and was currently doing some consulting work for a small machine company. The counselor outlined to the machine company a design which would use a chuck to hold different types of implements, and asked them to build one. A feature of the design was that rather than using a carved wooden shell for fitting to the stump of the arm, it had a combination of metal and leather straps which made it cheaper, lighter, and easier to fit.
>
> The surgeon was delighted and proceeded to display the new arm among colleagues and friends. He proposed that a company should be formed to develop the design further and make it available to others. Because of his age (eighty) and his handicap, he asked the counselor to organize the company. The counselor was reluctant and suggested instead that perhaps other companies would take it on. But the surgeon wanted the new company formed and agreed to advance the $20,000 that the counselor estimated would be needed to do so. A few machine tools were purchased, a machinist was hired, and development work began in the counselor's garage.
>
> Meanwhile, through mutual friends of the surgeon the Secretary of War had heard about the new arm, and ordered the Surgeon General to contact the counselor and inquire about obtaining limbs for wounded servicemen. Consumption of development funds was beginning to threaten continued work on the design when a $50,000 order arrived from the U.S. Army, and the A. J. Hosmer (after the surgeon) Corporation, which soon became the nation's leading limb maker, was in business.

An interesting aspect of this example is that neither the surgeon nor the counselor had previous experience in the artificial limb business. There were hundreds of limb shops throughout the world making their products as they traditionally had. There was no reason why those shops could not have introduced the same product improvements, but they did not, and the newcomers did without benefit of any special knowledge. The surgeon expressed the need, and the counselor took the initiative to fill it by reasoning freshly directly from the problem and then taking action to implement the solution he had thought out. After that, market forces came to bear and moved the venture ahead.

The next example followed a somewhat different interplay of initiative between the person who first became aware of the need, a salesman, and the person he sought out to help satisfy it, a technical specialist.

> A machine job shop in southern California employed a salesman in the late-1950s to solicit fabrication subcontracts from large aerospace firms. One of these firms asked if the shop could shape tungsten, a very expensive and difficult-to-work metal having desirable properties for use in rocket nozzles. Finding that nobody in the company or the local trade knew how to machine the metal, he contacted the eastern company that supplied the raw stock. He learned that a metallurgist working for that company had been experimenting with machining methods and had developed some effective techniques.
>
> The salesman requested assistance from the metallurgist, who traveled to the west coast to work on the nozzle-forming problem. Finding that the metal

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[11] Robert S. Morrison, *Handbook for Manufacturing Entrepreneurs* (Cleveland, Ohio: Western Reserve Press, 1973), p. 38.

could be shaped into suitable nozzles and seeing that additional orders could be obtained for such work, the salesman then persuaded the metallurgist to join him in forming a company and also persuaded the owners of the machine shop to help with financing for the new venture.

Because the capabilities of this new company were at the outset unique, it was able to earn substantial profits on its work. There were some management disagreements with the machine shop investors, who felt that the salesman was not sufficiently conservative in taking on difficult jobs for the new firm. Before long, enough had been earned for the salesman and the metallurgist to buy out their interest. The two then obtained additional capital through a public (Regulation A) offering of stock.

Eventually, competitors entered the field and reduced the profit margins, and the company was sold out to a larger firm, but not before the two founders had made healthy profits for themselves.

A common factor to these episodes was that the entrepreneurs who became involved in them were out "circulating" when they encountered needs which formed the basis for startup. Clearly there were also other people who were aware of those needs, but these two men took the additional initiative to work out solutions for them. Three ingredients that can be identified as important here are: (1) actively circulating so that needs can be encountered; (2) alertness to recognize those needs when they present themselves; and, (3) initiative to develop solutions. Possibly another factor is judgment in selection of needs to work on which have a venture potential, but it is hard to surmise the extent to which selection here took place. The extent to which other needs might have been ignored, rejected, or passed up for the sake of working on these because they appeared to have greater venture potential is not known.

SELF-EMPLOYMENT AS IDEA SOURCES

New product ideas may sometimes arise out of independent employment. Provided the entrepreneur was not doing his work for clients who can lay claim to the new product there should be no danger of "piracy" charges, and he may be able to develop a new manufacturing venture alongside his other free-lance activity without dropping his former means of support until it is no longer needed. That way, if the new venture happens not to work out, he can drop it without having lost so much. In the following example the venture succeeded.

In 1948 Elmer Winter and Aaron Scheinfeld, independently employed attorneys, needed to have a brief typed in time for an appellate court deadline, but they could find no temporary typists. This experience gave them the idea of a company that would hire typists on its own payroll and farm them out as needed for a fee. In August 1948, they formed Manpower, Inc. to perform that function. Initially only a sideline, the business grew so profitable by 1955 they had dropped law practice entirely. In 1956 revenues of Manpower were $8.5 million with profits of 10 percent net before taxes, coming from ninety-one United States and ten foreign offices, two-thirds of them operating on franchises. (Franchise fee was $750–$1500 plus 6 percent of sales.) By 1974 the company had 500,000 men and women operating out of 650 offices in thirty-two countries producing sales of $130 million and profits of $4 million per year.

Like the two inventor teaming examples earlier, this one began with encounter and recognition of a need followed by initiative in satisfying it and extending the solution to a broader market. It appears to have been another opportunity of which many people could have become aware and satisfied, one which did not require any high-powered expertise or heavy investment in assets. The entrepreneurs did not encounter the opportunity as part of any searching strategy. Presumably, they entered the law business expecting that would be permanent, and this venture represented simply a better opportunity that came their way and which they were astute enough to exploit very effectively.

Something of a contrast was the next example which, although it too involved discovery of the venture idea through self-employment, required a more specialized technical knowhow.

Acoustic Research, Inc., a major manufacturer of hi-fi speakers, got its start with the "flash idea" of its founder, Edgar Villchur, leading to the first acoustic suspension speaker in 1953. His prior background had included a graduate degree in education, World War II work in aircraft electronics, plus night courses and self-instruction in technical subjects. Hi-fi experience had included operation of his own radio shop and building custom sets leading to publication of articles on the subject which eventually became a 213-page *Handbook of Sound Reproduction* in 1957.

After he had filed his patent (without the services of an attorney), Villchur sought to interest other manufacturers in his new speaker design, but without success. When in 1954 a former student offered working space and some venture capital, Villchur somewhat reluctantly formed his own company to produce the speakers, planning to withdraw from management as soon as possible. In 1955 the company broke even on sales of $56,773. By 1958 sales were approaching the first million, and acoustic suspension speakers were taking over the market as other speaker manufacturers took licenses for the new design. Introduction of stereo and solid state components began to fuel the expansion as the hi-fi industry grew rapidly and with it Acoustic Research.

In this case the venture idea appears to have come more in the form of an inspiration, rather than in response to a problem situation as in the preceding example of Winter and Scheinfeld. Although the inspired discovery is probably more sought after by inventors and would-be entrepreneurs, the discovery of a need is probably a more reliable source. Studies of innovations have tended to find that innovations created in response to market needs usually fare better than those generated by "technology push" or simply advances in technical capability. There have been many exceptions in some high technologies such as electronics, however.

It is important to note that simply satisfying a need may not be enough. The need must also apply to a sufficiently large market. Innumerable clever devices are generated to solve "one of a kind" problems which do not lead to large markets or new business opportunities. The typical custom machine shop, for instance, continually solves problems for customers without ever generating proprietary products. Some of them do encounter proprietary opportunities, however, and being in business with resultant contact with customers and problems of the marketplace can be one way for a would-be entrepreneur to become exposed to many more startup opportunities than would a person shut up in the offices of a large corporation or government agency. Hence becoming self-employed in almost any form can be a reasonable way of seeking new venture ideas.

VENTURE IDEAS FROM HOBBIES

To some extent there tends to be a built-in conflict between hobbies and successful venturing, in that hobbies are things that people are willing to do at their own expense,[12] which puts a strong downward pressure on profits. Margins are consequently often low in such things as model making, small-scale farming, small-plane charter flying, antique car restoration, and various types of racing. Nevertheless, profitable venture ideas sometimes emerge. One example seen in the last chapter was the retired construction man who invented a better bottle cutter from his hobby. Another was the medical equipment maker who built himself a pair of fiberglass skis so that he could use them himself, and then found that they fit a "hole" in the market. A third was the following young man.

> Bill Nicolai dropped out of college three weeks before graduating and hitchhiked to Yosemite to mountain climb. For several years he worked sporadically, supplementing his income with food stamps, while traveling to other ranges and climbing other mountains. Then one night high in the mountains, an icy wind blew his tent apart, bringing death from exposure too close for comfort and setting Nicolai thinking about alternative tent designs to prevent such failure. He conceived a tube of fabric held open by circular metal hoops, borrowed a sewing machine and created a new tent. It worked, and now he began to imagine an enterprise to fabricate and sell a product he would call the "Omnipotent."
>
> After sewing up more units he rented a booth at Seattle's annual Street Fair and put them on display. "I don't think we actually sold any at the Fair," he recalled, "but we did sell a few a short while later after people had had a chance to look over the flyer we distributed." Sales began to drift in and Nicolai moved from the friend's basement, where he began, to a store where he manufactured in the back. After two years he was employing four friends and sales were running at $60,000 per year. "It wasn't much of a living," he said, "but we were surviving and enjoying the work."

At this point we might note where the business idea came from and where it led. Nicolai brought substantial experience to bear in conceiving his product and enterprise; not work experience, as did the entrepreneurs described earlier, but rather hobby experience. In a sense, his hobby had been like a job insofar as it had been a relatively full-time commitment over a period of years. It had given him knowledge of the available technology and of the market. The tent collapse and brush with death revealed a need. Pursuit of solutions to this need led to discovery of a product. Coupled with this product discovery the need to make a living triggered the idea of a business, which fairly straightforward actions then brought into being.

Although Nicolai's new enterprise was not very successful financially at this point it had the most important virtues of being in operation and at least being marginally profitable. Simply achieving such a position in itself usually leads to more ideas and opportunities—as we shall see in the next chapter it did in Nicolai's case. Thus, a hobby can lead to a startup concept and execution of that startup concept can lead to other concepts for expansion of the business.

Other ventures will be seen later which, like these mentioned above, came from hobby-inspired ideas. Such ventures tend to be restricted to products whose prototypes can be easily financed and constructed by one person. (Though not always. One man's hobby venture was a railroad.) Many of them are products within some sort of recreational market, sporting goods or luxury items. Their development often involves a considerable amount of one-man tinkering, followed by sales starting with a very limited market such as through local stores or else by mail order. Most of them are not initially conceived with the aim of starting a company, but are rather for personal use of the inventor, who finds that others would like copies, and it turns out that a venture is a good way to provide them.

This last characteristic is a particularly important one, because it indicates how hobby-inspired ventures often manage to circumvent a pitfall of many new companies. It has often been observed that a cause of failures among many new companies is a kind of egocentrism. The entrepreneur conceives the company to provide something *he* or *she* would like to have, taking it for granted that many others would like the same thing and can therefore be expected to buy from the new company. Then it turns out that the desire was not widespread at all, and zero sales result. These hobbyist-entrepreneurs started out with a self-centered focus, but then did not assume sales would follow, because they were not planning to have sales. It was only after the demand became evident that they developed ventures around the concepts.

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[12] The idea of trying to profit from hobbies is not uncommon. See, for example, Scott Witt, *Second Income Money Makers*, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1975,) and Herbert and Lyn Taetzsch, *How to Start Your Own Craft Business* (New York: Watson-Guptil Publishing, 1974).

That is not necessarily to say that would-be entrepreneurs should not try to parlay hobby ideas into ventures, or even try to choose hobbies likely to lead to commercializable ideas. But it is probably advisable to make a check on market demand before pushing ahead from the idea to the venture. Since hobby ideas typically are relatively easy to prototype, make two or three and take them around to stores. See how retailers and distributors react. Try a limited mail-order advertisement. Let some friends try the product or service on a small scale. Such limited market tests should be relatively easy to conduct and may be worth vastly more than they cost. The nice thing about hobby-inspired ventures is that if they do not work out as ventures, presumably the hobbies are worth the endeavor for their own sake.

VENTURES IDEAS FROM SOCIAL ENCOUNTERS

Connections, as discussed in the chapter on paths to startup, usually play a highly important part in the creation of a new company. Sometimes their function is to trigger the venture idea. Connections valuable in startup most often grow out of work relationships, but they can also come about socially. Murphy describes how one social conversation led to a new venture.[13]

> Bernard Berkeley is an easy-going New Yorker who prefers hard work—for half the year. "You can't pick me as an ambitious guy," he says. "I do what I have to do and still have six months to do what I want to do." It was during the "what I want to do" half of the year, when the Berkeley family was living in Miami, that Berkeley began conversing with his Florida neighbor. Since Berkeley had sold his successful radio repair business before moving down that winter, the conversation was about the neighbor's business. "I was left out of the conversation," says Berkeley a little defensively. "I wasn't in business so I had to listen."
>
> It developed that the neighbor owned a series of rides on Coney Island. The more Berkeley listened, the more he thought this might be the next business for him. He had bought a parcel of land, one of the few big ones left in Queens, before leaving the city, and it just might be ideal as an amusement park. When spring came, Berkeley returned to New York, and his first trip was to Coney Island. The friend he had met in Florida said, "Go over to 8th Street and talk to the ride manufacturers." Before going home Berkeley bought a kiddie merry-go-round, a fire-engine ride, a pony ride, a whip ride, and a sailboat ride. His Fairyland was the first kiddie amusement park in the City of New York and the prototype of many which followed.

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[13] Murphy, *A Business of Your Own*, p. 49.

In this example another key element may have been the fact that Berkeley already had enough money to walk into a manufacturer and buy a merry-go-round on the spot. The next entrepreneur did not, although in common with Berkeley he used serial entrepreneurship as a starting point. This perhaps suggests the possibility that entrepreneurs tend more to talk about present and potential ventures, even at social occasions, than do nonentrepreneurs, and this would logically seem to raise their chances of finding venture ideas. If this is true, then a tactic for would-be entrepreneurs might be to cultivate deliberately the habit of thinking and talking ventures more of the time. Even a cocktail party may suggest a venture idea, as it did for the following entrepreneur.

> Chance meeting with a government fisheries researcher at a friend's cocktail party caused an entrepreneur whose prior experience had been in the music business to develop a pioneering venture in salmon farming. After dropping out of journalism studies in his second year of college in 1956, he had briefly attended broadcasting school, worked two years in a TV station, and then with two others bought into a radio station in Oregon. After six months in which the station grossed only $1600 per month against expenses of $6000 per month, he was able to get out by writing off the $10,000 he had invested and signing over his stock in return for a release from personal liability by his partners.
>
> Taking a job as state promotion manager for a TV magazine, he began selling phonograph records on the side for a distributing company. He had to visit stations anyway, and as part of each trip, he would ask disk jockeys to try some of the records. This only lasted six months. He created a new job for himself by approaching a large record-distributing company and suggesting "what you need is an independent records division."
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> The company agreed, and offered him three months at $300 to make it work. It succeeded, and over the next four years he raised annual sales to $1 million. The company was chagrined to learn during this period that he also started his own record production and music publishing firm on the side. They made no move to interfere, but he found that in spite of the success of the division he developed for them, a pattern which they then began applying in other cities, he was paid no more than regular salesmen. His income was $10,000 from the company and $70,000 from his sideline venture. This displeased him, so in 1966 he "did a rather untidy thing, because I thought they were treating me rudely. I left them and took all the labels with me."
>
> His own venture continued to prosper, and in 1968 he sold out to a large national entertainment company, which left him financially well off. Searching for new investments, he invested in the startup of an Oregon radio station, but found as an absentee manager in Seattle he could not make it go. He then decided to go public as an entertainment company in music and concert promotion business. A registration was filed with the SEC and an offering prepared for 1971, but declines in the stock market prompted him to withdraw the issue.

Meanwhile, in 1970 he met socially the government scientist who was doing research on salmon farming. It seemed to the entrepreneur that such a venture would have profit potential and at the same time allow him more time with his family. He visited the growing pens of a large company, Union Carbide, in Puget Sound and reasoned that if they were doing it there must be good growth potential. Concurrently with the public registration of his company, he began visiting potential sites for a salmon farm and pulling together information for a prospectus to raise capital for such a venture. When the other public offering fell through, his activities on creation of the salmon farm intensified and the new venture was begun.

Not only was the idea for this venture triggered by a social encounter, but eventually the capital for the venture was obtained through similar channels. Had this particular venture not "come through," it seems, to judge from his record, highly likely that this entrepreneur would have taken on another. Had this particular social contact not suggested a venture idea, he would undoubtedly have found others from other social and/or business and/or other sources. His advantage in finding ideas was, in part, that he had social contact with someone who was working on a frontier of opportunity, which most social contacts are not, but, perhaps more importantly, that he was alert to the possibilities of opportunity arising and took action to follow it up.

As a final illustration of the role that social contacts can play both in triggering venture ideas and in pursuing them, there is the story of Keith Barish, who dropped out of college to start a bank and shortly became a millionaire.[14] In a 1969 radio interview he recalled that he had gone to Miami at age eighteen to work in politics for the right of eighteen-year-olds to vote. In a conversation with one of the state representatives he recalled being asked, "It's fine to go into politics, but what are you going to do for a living?" The sequence which follows, as he recalled it, was:

> And then I said, "What can I do?" And at that point there were a number of banks that had been chartered in Dade County and I thought, "That's a good business to start out in." So I decided I was going to start a bank and I went to some businessmen friends I'd known from politics, and organized a group, and applied for a charter in Hialeah. We got it, and I was in business.

Here there was a slight difference, in that the social contact did not directly suggest the particular venture idea, but rather simply the chain of thought that led to it. Unanswered is the question of whether Barish would have thought of the same idea had he not been asked the question about what he was going to "do for a living" at that particular time. The idea might have still occurred from other sources, even "out of the blue."

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[14] David L. Goodrich, *Horatio Alger is Alive and Well and Living in America* (New York: Cowles, 1971), p. 83.

PEDESTRIAN OBSERVATIONS

Occasionally, the inspiration for a successful new product or service will come simply from direct observation of a need in daily living, as the following examples may illustrate.

> The idea for "Q-Tips" hit Leo Gerstenzang when he noticed his wife's efforts to wrap cotton on toothpicks to clean their baby daughter's ears.
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> The idea for cellophane soda straws hit Otto Diefenbach, owner of a small Baltimore machine shop, when he unwrapped a pack of cigarettes, idly twisted the wrapper around a steel rod, and noticed that it came away in the form of a tube.
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> • • • • •
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> The idea for the safety razor hit King C. Gillette when he started to shave and found his razor dull. Ever since a conversation with the inventor of pop bottle caps, he had been looking for a product that people would throw away and reorder.
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> • • • • •
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> The idea to build an outboard motor hit Ole Evenrude when ice cream melted in a boat he was rowing to a picnic on an island in Wisconsin one warm August day.
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> • • • • •
>
> The idea to form Diners Club hit Ralph Schneider one night when he was entertaining friends at a New York restaurant and found he had lost his wallet.
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> • • • • •
>
> The idea for the automatic toaster hit Charles Strite when he got mad at the burnt toast in the plant lunchroom of the factory where he worked as a mechanic.

Often such needs could be contemplated and solved by many other people besides those who actually do it. But someone will always be first to act, and often a new business will be the result. The first step in this action is generally to recognize the need, and the second is to work out a solution. In the following case the need was presented in the form of a request.

> Lewis Salton's wife asked her husband to give her something to keep food hot at the table. As an engineer working for Radio Corporation of America the approach for solving this problem that occurred to him was an electrically heated tray that would hold serving dishes. He worked on the problem in his spare time and produced a device that satisfied his wife's need and also gave the basis for starting a manufacturing company. Sales of the company in 1978, thirty years after founding, were $10 million per year.

Expression of the need does not always come from someone else. The first person to see the need in the above case was Mrs. Salton, and had she the inclination and knowhow, possibly she might have undertaken to develop the product herself instead of asking someone else for it. That is the pattern which occurred in the following episode.

> L. L. Bean was orphaned at twelve, lived with neighbors, and later worked in his older brother's Freeport, Maine, store. Discomforted by wet, sore feet from a hunting trip in 1914, he decided that a useful piece of clothing would be a waterproof, chafe-resistant boot with a rubber bottom and leather top. The "experts," local shoemakers, said such a boot could not be made, so Bean cut tops from a pair of boots and sewed them to some rubbers. These worked well enough that his friends began asking for some, and this inspired Bean to print advertisements, which he mailed "to every man's name I could get hold of." This was the beginning of a successful mail-order business, which grew to annual profits of $80,000 on sales of $2 million.

Still another way of finding a need, as opposed to having a personal problem, as did L. L. Bean, or having someone else state the need, as did Lewis Salton, is simply to observe a need on the part of another person, possibly one he is not even aware of, or an opportunity in the form of a way to do something better. This sort of pattern appeared in the following case.

> In 1947 Louis J. Korter was a retail jeweler in Portland, Oregon, who got the idea of making aluminum shingles from watching a man covering a cedar-shingle roof with aluminum paint. Having earlier gained some knowledge of sheet metal forming as a young man, he created an aluminum shingle with interlocking edges in his basement, and applied for a patent. The "experts" to whom he showed his new product did not show much interest in it, but his neighbor was sufficiently impressed to mortgage his house and borrow on his life insurance. The neighbor thus contributed $22,000 capital for one-third of the business while the remainder was held by Korter. Sales were virtually nil until in the second year of business use of the shingles on a model home began to draw orders. Annual sales in 1949 rose to $300,000, then $500,000 in 1950. By 1954 the company was grossing $3 million and netting 15 percent profit.

Again, as with the ideas that sprang from social encounters, it was necessary that the entrepreneurs first be alert to needs and then take initiative for doing something about them. They also had to be selective in choosing these particular needs for attention, rather than, for instance, going to work on hopeless causes. One way a would-be entrepreneur can operate is simply to keep waiting and watching for such needs. Another is to go actively looking for them.

DELIBERATE SEARCH

It would seem to be a straightforward conclusion that the appropriate course of action for a person who wanted to start a company would be simply to start looking for a venture idea and that the most logical way to do so would be to apply some sort of methodical approach in the search. In fact, most entrepreneurs do not find their ideas in this way, as can be seen from nearly all the examples considered in the preceding pages. Rather, most entrepreneurs encounter their ideas, sometimes without even recognizing them at the time, from more or less random events of work or everyday life.

There are no scientific studies demonstrating how deliberate searching can raise the odds of finding good venture ideas, but searchers do find them, as some examples to follow will illustrate. Coincidence and surprise still often enter in, but it can be seen that searching sometimes helps.

One author has defined the methodical search approach as being to "deliberately make contact with all the potential sources" of the kind of idea being sought, and illustrated application of this approach with the following example.

> "One experienced executive starting a new company asked all his business acquaintances to inform him of interesting new ideas. He also called up patent attorneys, inventors, industrial research departments, corporation lawyers, investment bankers, and venture capital firms. For three months, he devoted one day a week to a methodical search. The executive then selected a new-type automotive part which became the basis of a successful new firm. His reputation for being receptive to new ideas soon resulted in broadening the line with several additional meritorious new products."[15]

Presumably, this executive also conducted his affairs in such a way that those whom he contacted felt that there was good reason for them to make an effort to be helpful. The indication that people kept on passing ideas to him after his venture was going seems to suggest that he saw to it that there had been "something in it" for those who helped him.

Another person who applied this strategy was the engineer mentioned in the preceding chapter as an example of starting with corrections. He made it a practice to contact each day at least one person who might be able to help find a venture until he located a product developed at a university and obtained a license to manufacture it. Reflecting on how he came to adopt that searching strategy and what he learned in applying it, he commented.

> I tried looking at all sorts of possible sources, magazines, literature and the like, but it was no good. They could not answer questions and they were always obsolete. Talking to people was the answer, and in particular I learned that the best ones to talk to are often the marketing people, because they know what will sell and what will not. The best way to do it is first to pick an industry you want to work on, then start at the bottom. Talk to lower level marketing people and customers to learn the basics, then work your way up to the managers. The managers are the ones who are likely to have

[15] Cyril C. Hermann, "Ideas for New Business Firms," *Monthly Review*, (Federal Reserve Bank of Boston, July, 1953).

> more opportunities than they can handle, but before you approach them it's important to be able to talk their language in the business so they will take you seriously. So you play work-up, learning as you go. This way you can reach a point where you can call the president and say, "I was just talking to your sales manager the other day, and I have some more questions. Will you join me for lunch?" Now you have somebody who really knows the business and can help you find the best opportunities.

A different view about whom best to contact was adopted by another entrepreneur who decided to make the rounds of purchasing agents, whom he asked about what things they found hard to obtain. This way he identified a particular product, the electronic delay line, and was able to form a company that produced it and made him wealthy. Still another type of contact of proven effectiveness is the plastic factory operator. E. Joseph Cossman said he made it a practice to write the plastic factories in his area at least twice a year to inquire whether they had any tooling they would like to sell. In this way he had found products that others had developed but had been unable to sell and which he could consequently acquire cheaply and sell with fresh approaches of his own. Trade shows are also cited by Cossman and others as particularly likely places at which to encounter people who know the market—both sellers and buyers—while at the same time receiving stimulation for ideas from seeing the new products of other companies on display.

Simply the act of searching persistently itself can help trigger ideas, because the mind is then more likely to take note of opportunities when it encounters them. Studies of creativity have consistently found that discoveries often occur at unexpected moments, *but only after* a person has applied sustained and often discouraging effort at trying consciously to work a problem out. In the following case a lawyer named Wendell Cherry had applied considerable effort to trying to find a profitable enterprise, including an unsuccessful startup, a coffee house. His search continued beyond this failure, however, until one day another idea cropped up as described in Armour.[16]

> "One day Wendell (Cherry) and David Jones were playing golf, and talking about how to make money, when David mentioned that a friend of his, Bryan McCoy, had started a nursing home near Big Spring Country Club and was doing all right. This stuck in Wendell's mind because a few months earlier he had helped a client form a corporation to start a nursing-home business. The venture had never gotten off the ground, but during the effort Wendell had seen a promotion film stressing the need for better, more modern nursing homes. He and David decided to study the matter, and David went to look at McCoy's place."

After further study the two men recruited other partners for architectural help, real estate, construction services, and so forth and entered the business. The beginning was modest, but the industry boomed and they went with it, Cherry accumulating over five million dollars from it within a decade. As it turned out, the idea succeeded probably far beyond what he originally envisaged, so luck as well as effort were important. But without the deliberate search on Cherry's part it might not have occurred at all.

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[16] Lawrence A. Armour, *The Young Millionnaires*, (New York: Playboy Press, 1973) p. 94.

The next entrepreneur was also searching, but not for what he found. His strategy was to find a going concern he could acquire, but he ended up starting a new company instead.

> He had been involved in modest ventures as a youth, taking opportunities as they came, then had managed through high performance on a test, and in spite of his somewhat lackluster performance in college, to land a job with a major computer company. Highly successful in setting sales records, he moved rapidly up the promotion ladder, finally reaching a point in the summer of 1973 where the next advancement would require leaving the West Coast location he loved and moving to the company headquarters back east. A better alternative, he thought, would be to pursue a company of his own.
>
> But here he felt frustrated. The most likely type of company to start, he thought, would be one to distribute minicomputers. But there were two major drawbacks. It tended to take from four to six months to get such a product sold, which would require more sustaining capital than he thought he could raise, and he was also afraid there would not be enough repeat business, since each sale would satisfy the needs of the customer to whom it was made.
>
> So he decided to seek an acquisition instead. He figured that he would be able to scout out plenty of prospects from his experience in sales. To get help in screening prospects he offered a two percent ownership in his future company to the financial vice president of another company whose judgment he respected. The man offered to advise him without charge. Spending his evenings and weekends searching, the entrepreneur was able to locate a series of prospects. But there was always something wrong. Most involved very low profit for long, hard hours of work. The few that seemed to offer higher profits also appeared to require that those profits would have to be plowed back to pay off the purchase price and sustain operations, so there would be a substantial sacrifice in lifestyle. In still others he feared that his lack of technical know-how would be too serious a handicap. A year of searching passed and still he was frustrated.
>
> Then in the middle of one night suddenly he awoke with an idea about how he could create the minicomputer distributorship he had originally thought of. He got up and wrote out a plan involving multiple sources of income to carry through the lean periods and gain repeat business; sources including sales, leasing, accessories, and leased equipment. Later he transformed his midnight notes into a fuller plan with organizational and financial details. When he showed it to his financial advisor, he got another surprise. The man was independently wealthy and offered to advance the $100,000 needed to start the company personally. The venture was begun.

In hindsight it could perhaps be argued that this entrepreneur should have crystallized the idea for this venture sooner. But he did not, and neither did anyone else. Had he done so, he might still have rejected it as requiring more capital than he could raise. Performing the venture search with the aid of the financial advisor developed a contact with capital with enough confidence to invest in the idea, a resource he did not have initially. So it can be argued that the search was necessary, and as it turned out also sufficient.

One industry that has had to become highly professionalized at finding new products ideas is the toy industry, in which some large companies are able to generate half their sales each year with new products. Others often immediately copy them, and many of the toys have brief market lives, so the companies have no choice but to keep moving on to new things very rapidly. How do they find their ideas? "By every means they can think of" was the reply of one toy inventor. They use brainstorming, licensing from inventors, internal pressures on their own organizations, asking customers, coping and modifying other toys of their own and other companies, adaptation of new technology, surveys, contests, marathons, anything that might yield results.

At the same time, they also find that some approaches work better than others. Many ideas come from independent inventors, for instance, but an extremely small fraction, something like one in a thousand, "pan out." Most of the ideas chosen come from professionals in the design areas of the company whose daily job is to develop new ideas. They were chosen for that work because they showed talent at it, and by practice they at least feel they get better at it, so that it is extremely difficult, almost impossible, for "amateurs" at this particular function to compete with them. Apparently practice builds competence in idea searching as it does in other lines of activity. It would seem to follow that a would-be entrepreneur should regularly and steadily practice venture idea searching, if the odds of venture finding are to be maximized.

Alternative Personal Tactics

In choosing a plan for deliberate venture search, there are many options open to the would-be entrepreneur beyond the alternative of simply waiting and hoping a venture idea would come. Some of these options include the following.

1. *Job selection.* It was pointed out earlier in connection with success correlates that more entrepreneurs tend to emerge from some jobs and some companies in some geographical areas more than others, and also that successful entrepreneurs tended more often to have worked in several different functional areas—production, sales, finance—rather than only one. Implications for the would-be entrepreneur, therefore, might logically include seeking out such job circumstances and changing jobs as necessary to acquire breadth of experience in a geographical area and industry where startup is favored. Working for smaller companies, for instance, appears to be a better tactic for reaching toward self-employment than working for larger ones. Another straightforward tactic can be to seek employment in a firm owned by someone likely to entertain the possibility of selling out on some basis.

Other tactics for utilizing employment as a means of strengthening entrepreneurial potential can be to accumulate methodically lists of connections—suppliers, potential employees and partners, sources of expertise, potential customers and middlemen, and sources of capital associated with the industry in which the entrepreneur works.

2. *Venture alertness.* In each of the examples it can be seen that there could have been others who took advantage of the ideas besides the entrepreneurs who did. The entrepreneurs were the ones who were sufficiently alert to spot the opportunities, however, and to do something about them. Hence cultivation of sensitivity to venture possibilities by constantly looking for ways to find needs and desires of other people and to satisfy them is a logical tactic for would-be entrepreneurs. A possible way to cultivate "customer empathy" is to study what people choose and why, and to ask them what else they might like to have.

3. *Personal exposure.* Generally, action is better than simply thinking, as noted in the chapter on success correlates. Such actions as discussing venture possibilities and desires with others and taking advantage of opportunities to participate in ventures of others, to speculate about venture possibilities with other business people, and to offer ideas and see what sorts of reception they get can help. In short, the would-be entrepreneur should try out new ideas, just for the learning experience if nothing else.

4. *Seeking contacts.* Possibly the most effective deliberate search tactic of all is to make it a practice to seek out and meet people who may be able to help. These may include marketing people, customers, inventors, entrepreneurs, prospective partners, patent attorneys, purchasing agents, venture capitalists, engineers, suppliers, and many others. Association can be sought with others who have venture ideas and desires.

5. *Hobby choices.* Hobbies less likely to spawn venture ideas can be replaced with other hobbies more likely to do so. Bowling or golfing with more entrepreneurially oriented people may be more productive than with "organization people" or routine operators. If a hobby includes making things, it may be better to reach toward things that potential customers can use, as opposed to the entrepreneur's repairing the home that only he or she uses, and it may be more productive to work ideas for new products rather than ones already made—new biofeedback devices, for instance, rather than furniture designs taken from magazines. The objective should be to be creatively productive for other people.

6. *Study.* One way to cultivate greater sensitivity to venture opportunities can be to study entrepreneurial patterns that work, such

as those illustrated in these pages. This should enable the reader to be aware of more possible strategic combinations that can work and consequently increase the circumstances offered by life.

Any successful entrepreneur can testify to the tremendously wide range of knowledge that must be brought to bear to accomplish a venture. Consequently, it makes sense for a would-be entrepreneur to expand his or her base of knowledge into many subjects. The entrepreneur mentioned earlier who made it a practice each day to contact, outside working time, at least one person with the aim of locating a venture opportunity (and succeeded) also took advantage of all opportunities he saw to attend courses, seminars, conferences, and symposia pertaining to entrepreneurial subjects. A list illustrating the kinds of subjects in which useful learning may be available can be quickly generated from topics on publications lists of the Small Business Administration and from tables of contents in books on small business management available in any library.

7. *Moonlighting.* A logical approach for minimizing new venture risk is to work up to the venture on a part-time basis while retaining a full-time regular job. Weaver advocates this approach, indicating that the shift from regular job to sideline venture should be made only after the entrepreneur has achieved some minor sideline commercial successes and has learned about starting companies through experience.[17] This approach, which was illustrated earlier under Sideline Ventures in chapter 3, can be summarized by the following suggestions:

(a) Seek out and talk to others who have successfully developed sideline ventures into full-time occupations.
(b) Seek opportunities to develop business skills in different directions. Keep some books, do some selling, do some business purchasing, do some payroll work, deal with some government agencies. Do some volunteer work if possible in the line of activity you intend to pursue.
(c) Collect venture ideas on scraps of paper whenever they occur. Buy a used file cabinet and collect information on these.
(d) Involve your family in the project, but discipline them not to bother you when working on it at home.
(e) Set up a home office somewhere in a corner. Pick a logo and obtain letterhead stationery. Set up accounting books. Obtain Internal Revenue Service booklets on business taxes and deductions. From City Hall learn about state and local regulations and requirements.
(f) Seek out ways, such as through trade associations, of replacing company group insurance and other fringe benefits.
(g) Call around and locate an attorney, an accountant, and a banker. Briefly inform them about your venture ideas and learn what they can do to help for what prices. (They do not charge for telling about prices. But ask at the outset, particularly with lawyers.)
(h) Save money. Buy used rather than new things. Cut down on luxuries. Throw away the credit cards. Squeeze the household budget.
(i) At your regular job be a conscientious, model employee. Take every opportunity to learn about how different facets of a business work. But do not talk about your moonlighting or venture plans.
(j) Actually start some small-scale ventures, whether service, mail order, small fabrication, or whatever. Be prepared for some failures, but learn from them and move on to more ventures. Stick with full-time employment until you achieve some small-scale successes at least.

8. *Life-style.* Implicit in the above suggestions is a kind of venture-oriented life-style. Saving money for a stake, looking for opportunities, trying things, seeking to learn can all be part of such a life-style. An additional facet can be developing connections and working relationships through patterns of socialization. The young insurance man who encountered the pennies opportunity (and subsequently many others) believed in joining clubs where he would meet people with wherewithal. Such people, he found, are often approached by many other people who are aware of or otherwise involved in venture opportunities, and in these situations there is sometimes room for participation by additional entrepreneurs. Such people, he found, are also sometimes well-informed about others who can help with ventures, including professional advisors and potential investors. By moving in such circles socially and through his behavior indicating that he was seeking to become an entrepreneur, this man believed he substantially raised his odds of encountering venture opportunities.

In the chapter on starting points it was shown that some entrepreneurs go from one venture to another, regarding themselves as "starters" rather than "runners" of organizations. Such a pattern is another illustration of what might be regarded as an entrepreneurial life-style.

Strategies for Deck Stacking

It should be possible to work many different combinations of the above tactics into strategies for obtaining the five key venture entry factors mentioned earlier. A matrix for considering possible combinations appears in Figure 5–1. With this the reader may find it worthwhile to think about possible strategic combinations which either might have been used for "stacking the deck" to maximize odds of success in some of the venture examples discussed earlier or for some potential new ventures.

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[17] Peter Weaver, *You, Inc.* (New York: Doubleday, 1973).

RESULTS \ TACTICS	Venture Alertness Cultivation	Study of Venture Subjects	Job Selection	Moonlight Venturing	Entrepreneurial Lifestyle
Technical Know-how					
Venture Idea					
Personal Contacts					
Venture Resources					
Customer Orders					

Figure 5–1. *Matrix of Tactics and Venture Startup Factors*

An illustration of effective personal strategy in developing a new business is the story of Vern Anderson and the formation of Vidar Corporation, a multimillion-dollar electronics company on the San Francisco Peninsula.

> Trained as a mechanical engineer, Anderson decided that the time to take risks in entrepreneurship was while young, before family responsibilities precluded them. At age twenty-four he enrolled in Stanford Business School, and by the spring quarter of his second year, 1957, just before graduation, he began venture discussions with a friend who was working on a PhD in electrical engineering. Together with an engineering faculty member, and an electrical engineer from the Stanford Research Institute, and his friend's father, who happened to be an attorney, he began to have regular meetings once a month.
>
> "Although my training was in mechanical engineering, I decided to go into electronics manufacturing," he recalled, "because I liked the local area and it was a good one for electronic companies, it allowed low capital entry, it involved a challenging and rapidly developing high technology, and it was a growth industry.
>
> "Since I knew nothing about electronics, I gathered a group of guys who wanted to learn about it like I did, and set up a seminar which ran for one year at night. We went through Terman's text on *Radio Engineering,* all 750 pages of it, working out all the problems in the chapters. After that I felt I could adequately talk to electronic engineers, although I couldn't do their work."
>
> He went to work for an electronics company after graduation "that had never been anywhere and was never going anywhere" because it gave him the chance to learn about the electonic equipment manufacturing business. "My boss was the general manager," he recalled, "and he said he wanted me right outside his office, so that whenever he wanted to chew I would be right there. I had gone from the school of enlightened management at Stanford to the school of very unenlightened desk pounding."

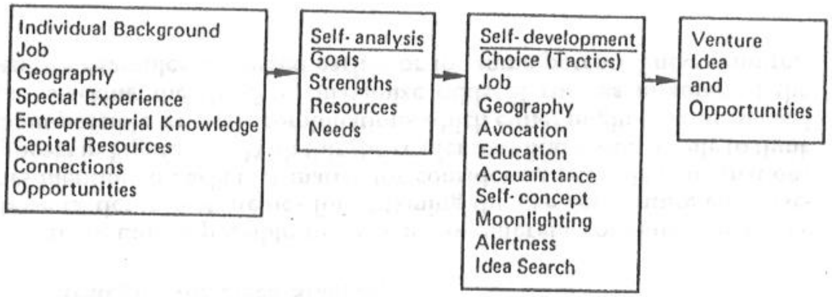

Figure 5–2. *Deck Stacking*

> Nights and weekends, however, were a different matter, as the entrepreneurial team explored various venture possibilities. Plans and policies for the new company were hammered out over brown bag lunches on their station wagon tailgates in the parking lot. "We didn't have an idea at the beginning," he said. "We started with the desire, then went to the idea, and then went to the reality." Some ideas for electronic products, such as specialized power supplies, were generated and preliminarily designed, but the group had no capital whatever to enter manufacturing. "We landed a contract with Ampex and then told them if they wanted us to get started they would have to provide some money. They gave us $5000 for an R & D program, and that was the beginning of Vidar. We built that to $63,000 in twenty months of nights and weekends, $55,000 of it in the form of cash. With that nest egg we were able to begin manufacturing our own products, quit our other jobs, and develop the new company"

A more generalized scheme for describing possible personal strategies for "stacking the deck" in favor of discovering more venture ideas is depicted in Figure 5–2. In effect, this scheme provides a missing link for the Swayne-Tucker startup model presented in the preceding chapter (Table 4–1), particularly for steps 5 through 8, which presumed prior identification of a product and market.

Generating ideas is, of course, only part of the venture discovery process. The ideas must be screened and a selection made of candidate ideas worth further investigation, eventually leading to one that is to be pursued as a startup. This chapter has concentrated on the idea-generating process. In the next chapter attention will shift to the process of screening and selection of which ideas to pursue.

SUMMARY

If sources of venture ideas were divided into two general groups, those encountered mainly by unforeseen coincidence and those found through deliberate searching, the majority by far would be of the former type. This chapter illustrated how sometimes ideas come through invitation from other people for the entrepreneur, who may not have been considering it at all, to undertake a particular type of venture. The greatest number of venture ideas arise out of employment, one of the career starting points noted in Chapter 3 and a consistent finding throughout examples of the book. But they also occur out of hobbies, social encounters, and chance observations of need, as when Mr. Evinrude's ice cream melted in the rowboat and stimulated the idea of an outboard motor. Many people may have been exposed to the same needs and venture opportunities; what sets the entrepreneurs apart is that they take action to do something about it, namely devise a solution for the need and follow through to make that solution available to others. Hence, it is possible for entrepreneurs to influence discovery and follow-through and not remain entirely at the mercy of circumstance. Eight categories of action were suggested that can help the idea-discovery process. Emphasis, however, should be upon the word "action," because it is by circulating about in the world, doing business, and encountering new situations and people that needs and venture ideas are more likely to be discovered rather than by simply sitting and thinking about it.

Chapter XIII

Detailed procedures of group brainstorming

EXPERIENCE has brought to light further knowledge in regard to the principles, procedures and applicability of group brainstorming. Much of this new light has come from the practical use of group brainstorming by all kinds of organizations.

Educational institutions have done much to develop a deeper understanding of the working of group brainstorming. Starting in 1955, Creative Problem-Solving Institutes have been conducted at the University of Buffalo and other universities. The hundreds of educators, executives and military officers who have attended these institutes have practiced group brainstorming to an extensive degree. The resultant experience has helped develop a better understanding of methodology and has helped confirm these findings of scientific research:

1. *Ideation can be more productive if criticism is concurrently excluded.* Education and experience have trained most adults to think judicially rather than creatively. As a result, they tend to impede their fluency of ideas by applying their critical power too soon. By deferring their judgment during a brainstorm session, they find they can think up substantially more good ideas.

2. *The more ideas the better.* Practically all the experience with group brainstorming confirms the principle that, in

ideation, quantity helps breed quality. In case after case, the last 50 ideas produced at a brainstorm session have averaged higher in quality than the first 50.

Some enrollees at recent institutes have shown a tendency to attribute to brainstorming an undue psychological significance. Although the underlying principles seem to be clear enough and relatively simple, one of the institute leaders offered this theory:

"Scientists recognized 'synergistic action' as meaning that two or more things can be combined to yield something greater than the sum total of the individual parts—like $2 + 2 = 5$. Group brainstorming can provide similar synergistic action, too."

And a federal official suggested that group brainstorming induces extra-normal perceptions of a psychically intuitive nature (as in Tecla, Newton, Ouspensky). "At least, in my experience," he said, "brainstorm sessions have occasionally produced what appeared to me as intuitive solutions to a relatively fundamental problem."

Dr. Richard Youtz of Columbia University made an exhaustive survey of psychological experiments significantly relevant to brainstorming principles. Several of the tests he reported had to do with two of the blocks which tend to curtail ideation in the conventional type of conference—frustration and functional fixation.

Professor S. M. Moshin's research revealed "the effect of frustration on problem-solving behavior." For one thing, this indicated how seriously a sense of inferiority can hamper creative output. Since brainstorming excludes factors which tend to induce such an emotion, this method not only reduces frustration to a minimum, but also breeds self-confidence.

WHARTON REPROGRAPHICS 10

Several of the experiments covered in the Youtz report dealt with factors which tend to increase "functional fixedness" and "rigidity." These blocks to ideation are reduced to a minimum by the "free-wheeling" rule which indispensably governs each brainstorm session. In summarizing the research that had been done in the areas outlined above, Dr. Youtz commented: "These experimental findings support the contention that the judicial process should be reserved until after the tentative solutions have been achieved."

Although psychological evaluation of group brainstorming is important, the author of this book recommends that it be judged comparatively and pragmatically—simply as a workable way of jointly producing more and better ideas than is possible through the usual type of conference in which judicial judgment jams creative imagination.

2. *Composition of brainstorm panel*

The question as to what should be the size of a brainstorm panel has been subject to a wide variety of experiments. An extreme example was a session of over 200 training directors of federal agencies in Washington, D.C. Well over 100 promising ideas came out of this group in less than 30 minutes. Then, too, the American Association of Industrial Editors secured over 400 ideas from four brainstorm panels averaging about 50 men each. Likewise, Professor Dan Pursuit of the University of California has reported that, in his course for police officers attending the Delinquency Control Institute, panels of as many as 40 have successfully used brainstorming.

The consensus of opinion, however, favors the division of such groups into smaller sections. A strong advocate of this

n educational consultant, Dr. F. C. Finsterbach. He con-
cted brainstorming in one company for 28 members of the
ff. But, first he divided this personnel into four groups of
ven each.

He employed a two-session technique. The first session
ainstormed the problem, "What are the specific problems
our company most in need of solution?" This produced
targets for the ensuing session to shoot at. Over 200 ideas
sulted from the second brainstorm which creatively at-
cked two problems selected as a result of the first session.

When group brainstorming is used as a continual opera-
ion, the desired number of panelists can be pre-determined.
Based on the preponderance of experience, the optimum size
s indicated as being about a dozen.

An even number such as 12 might seem to be at variance with one of the principles advanced by Professor Robert F. Bales of Harvard as a result of his research on conferences. The main reason he recommends an odd number is to assure the availability of a majority, and thus avoid the danger of a split between two cliques of equal number. This reason is obviously sound in regard to decision-making conferences, but it need have no bearing on ideation conferences from which evaluation is excluded for the time being.

The ideas produced by group brainstorming should always be screened and otherwise processed at later conferences —preferably by conferees other than those who had thought up the ideas. Since such follow-up conferences would judge and sometimes decide, an odd number of conferees would then be indicated. The optimum number in such cases would be five in accordance with Professor Bales' findings.

Experience has likewise indicated that the ideal panel should consist of a leader, an associate leader, about five regular or "core" members and about five guests. These "core" members serve as pace-setters. They should be people who have proved themselves to possess above-average facility in offering suggestions.

In most cases, a different group of guests should be invited for each brainstorm meeting. But they, of course, should be expected actively to participate, not merely to observe.

Rotation of guest-panelists is strongly recommended by Dr. Merle Ogle, Educational Consultant of the Air Force ROTC. Here is his conclusion: "The same group left together over a long period of time tends to develop a rigid pattern of thinking, so that one member can almost anticipate the reactions of another. Therefore, we try to keep changing the make-up of our groups for brainstorming sessions."

The nature of the problem to be brainstormed should help determine the type of guests to be invited. For example, if the subject deals with shotguns, people with hunting experience should be invited to participate; if it concerns hotels, the preferred guests would be those who have traveled extensively.

Several organizations have found it helpful to include females on each brainstorm panel. The girls try to "outideate" the men, and vice versa. This tends to induce an extra rivalry which stimulates the flow of ideas.

Experience justifies a word of warning to the effect that a panel should consist of people of substantially the same rank. If superior officers are present, they tend by facial expression or otherwise to induce an inferiority complex on the part of panelists, and thus to discourage "free-wheeling." A case in point occurred in a telephone company. A "big boss"

at in on the session. The ideas began to flow at an inordiately slow rate. After 10 minutes the executive left. About our times as many suggestions were forthcoming in the last 0 minutes as in the first 10.

Although the preponderance of experience indicates that rainstorm sessions tend to be less productive when a rankng officer is in attendance, General Electric has reported successful sessions with high-ups present—but not as participants, solely as observers. This is another indication that the procedures set forth above should not be regarded as inflexible. Except for the basic brainstorming rules (as set forth in the previous chapter), all other phases of the methodology should be adapted to circumstances.

By way of summary, the following is a condensation of the pertinent part of the University of Chicago's "Group Brainstorming Manual":

Each panel should consist of a chairman, an assistant chairman called "idea collector" and about 10 others.

If guests are included they should be invited from various departments, a different group for each meeting. This rotation helps spread a creative spirit throughout an organization.

The nature of the problem to be brainstormed should help determine the type of guests to be invited.

It is often helpful to include two or three women on each brainstorm panel. For problems of a feminine nature, at least half of the participants should be women.

Since panelists who have attended no previous sessions are unfamiliar with group brainstorming, a fairly thorough orientation is recommended. The ideal is a 30-minute presentation which covers the basic principles of ideation as well as brainstorming procedures. (Scripts, slides, and sound movies for this purpose are available from the Creative Education Foundation.)

3. *Preliminary procedures*

The panel leader should be trained in advance for his function. Ideally, he should have taken a course in creative problem-solving. At least, he should have assiduously studied the principles and procedures set forth in this book.

Some industries have engaged professional educators to train creative leaders. One instance of this was at Bridgeton, N. J., where the Owens-Illinois Company enlisted Dean B. B. Goldner of LaSalle College for such a purpose. He conducted an intensive course for nine staff-members of that plant, before they assumed their leadership duties.

Having become grounded in the basics of brainstorming, each panel leader should develop in advance of each session his own list of suggested solutions to the problem. Then, if the stream of ideas slows down, the leader can prime the joint flow by interpolating suggestions of his own. On the other hand, he should always hold back whenever any of his panelists are waiting to be heard.

The leader should also be prepared to suggest leads by way of certain classifications or categories. For example, a chairman may say, "Let's look for ideas on this problem in such-and-such an area." For the purpose of thus pointing out directions in which to look for ideas, the questions listed in Chapter XVI have been frequently and fruitfully used.

The leader's first job in setting up a session is to process the problem. The objective should be to make sure that it is particular, not general. A problem like "How to introduce a new synthetic fibre" is too broad. This should be broken

own into at least three sub-problems, such as: (1) "Ideas r introducing the new fibre to weavers and mills." (2) deas for introducing the new fibre to dress houses and tters." (3) "Ideas for introducing the new fibre to re- ilers."

The guiding principle is that a problem should be simple ather than complex. Failure to narrow the problem to a ingle target can seriously mar the success of any brainstorm ession. On the other hand, sessions have been successfully levoted solely to breaking down a broad problem into its pecific components. Subsequent sessions are then held to roduce ideas on the sub-problems, with one session devoted o each of these.

In other words, definition of aim is often half the battle. First of all, we should try to split our problem into its components. Then, we should coin each sub-problem into a perfectly definite question. These and other factors in the proper processing of problems were previously stressed in this book. They apply even more vitally to group brainstorming than to individual ideation.

As already stated, the panel leader should also arrange for the conditioning of new participants for their initial session. For this purpose, "warm-up" practice is usually used at the start of the meeting. Some exercises call for some simple problem unrelated to the subject of the brainstorm session —a problem such as: "In what ways could men's pants be improved?"

The panel leaders first select the personnel. Then, at least two days in advance of the session, the participants are invited, and they are simultaneously supplied with copies of a "background" memo of not more than one page in length.

The double purpose of this memo is to orient the panelists and to let them "sleep on the problem," thus allowing incubation to enhance the workings of association. In a typical memo for this purpose, issued over the signature of the panel leader, the first paragraph would name the time and place. The second paragraph might read like this: "The problem we will brainstorm is this: '*What new products not now available are needed for the home?*' Here is your opportunity to dream up all those gadgets, appliances, etc. which you believe would make home life more enjoyable."

Such a memo should include a few examples of the type of ideas desired. In this case, leads like these might be mentioned:

1. BEDROOM—Sheets with double-strength weave in the center where the wear shows first.
2. KITCHEN—Suction cups on bottom of egg-beaters to prevent skidding in bowl.
3. LIVING ROOM—Venetian blinds so constructed that the slats in the upper or lower half may be opened or closed independently of each other half.
4. DOORWAY—Switches for door bells so you can turn them off when children are asleep or when you don't want to be disturbed.

The brainstorm session for which that memo served as "background" was actually held. Within 40 minutes, 12 men and women produced 136 ideas.

In that case the problem was of a somewhat multiple nature. It would have been better if each of four or five subproblems had been brainstormed separately. Although this would have taken more time, the results would have been relatively superior.

By way of summary, the following is a condensation of e pertinent part of the University of Chicago's "Group rainstorming Manual":

The chairman's first job in setting up a session is to go over e problem and make sure that it is simple and specific—ot an "umbrella" problem like "How to win the cold war."

The basic aim of brainstorming is to pile up a quantity of lternative ideas. Therefore the problem must be one that ends itself to many possible "answers." Brainstorming should ot be used on problems requiring value judgments like 'What's the best time to start to teach algebra?"

After a single specific problem has been determined, the anel leader should prepare a one-page memo which highights the background of the problem, states the problem in ts simplest terms, and spells out at least two examples of he type of ideas which are sought. (When possible this hould be accompanied by exhibits in further illustration of the problem.)

The chairman or the assistant chairman then selects the panelists. At least two days in advance of the session, the participants are invited by phone or otherwise; and they are simultaneously supplied with copies of the "background" memo.

The panel leaders should develop in advance their own list of suggested solutions to the problem. If and when the session slows down or gets off the track, the leaders can then prime the joint flow of ideas by contributing some of their own.

The panel leader should also be prepared to suggest leads by way of certain classifications or categories. Many chairman have found that idea-spurring questions like these can be helpful: *Put to Other Uses?* (New ways to use as is?

Other uses if modified?) *Adapt?* (What else is like this? What other ideas does this suggest?) *Modify?* (Change meaning, color, motion, sound, odor, taste, form, shape? Other changes?) *Magnify?* (What to add? Greater frequency? Stronger? Larger? Plus ingredient? Multiply?) *Minify?* (What to subtract? Eliminate? Smaller? Lighter? Slower? Split up? Less frequent?) *Substitute?* (Who else instead? What else instead? Other place? Other time?) *Rearrange?* (Other layout? Other sequence? Change pace?) *Reverse?* (Opposites? Turn it backward? Turn it upside down? Turn it inside out?) *Combine?* (How about a blend, an assortment? Combine purposes? Combine ideas?)

As previously stated, these questions will be fully developed in subsequent chapters.

4. *Conduct of session*

The session should start with a further explanation of the problem and with answers to questions.

The leader should then present the four basic rules (as spelled out in the previous chapter). A placard is usually used to display these rules.

The leader then calls for suggestions. He quickly recognizes those who raise their hands to signify that they have ideas to offer. Sometimes so many hands are raised that he simply goes around the table and lets each person present one idea in turn. Participants should never be allowed to read off lists of ideas which they may have brought to the meeting. These can be handed to the leader before the session. Only one idea at a time should be offered by any brainstormer. Otherwise the pace would be badly impeded because the opportunity for "hitch-hikes" would be precluded.

The leader especially encourages ideas that are directly

sparked by a previous idea. This chain-reaction is so worthy of full play that panelists are asked to snap their fingers as well as raise their hands whenever they have such "hitch-hikes" to offer. If several hands are up at the same time, the leader gives priority to the finger-snappers and thus makes the most of the power of association.

When several hands are raised there is danger that the last panelist called upon may have become so absorbed in the ideas of the others that he will have forgotten what he was about to suggest. Therefore, it is recommended that each panelist make notes of ideas he plans to offer when his turn comes.

To record the ideas brought out by the brainstorm session, a secretary should be appointed. This person should sit next to the leader so as to be in direct line of conversation between him and the others. The ideas should be taken down reportorially—not word for word. Some organizations have found it helpful to have two secretaries make notes. Greater accuracy and clarity are thus achieved. In this case, one secretary takes the even-number ideas and the other records the odd-number ideas. Sometimes a session is tape-recorded. This enables the secretary to recheck the list of ideas which has been reportorially recorded during the meeting.

In any case, each idea is consecutively numbered during the session. This enables the leader to know how many suggestions have come forth up to any point in the meeting, at which time he might apply pressure of this type: "Let's get just 10 more ideas," or, "Let's break 100," or, "Let's each of us come up with just one more idea before we close." This kind of drive often uncovers new ideas which set off a chain of other and better ideas.

No idea is identified by the name of its suggestor. The very same idea may have been previously thought up by another panelist. Or it may have resulted directly from a suggestion made by someone else a few minutes before. The need for group congeniality far outweighs the good of granting individual credit.

As to how long the idea-finding activity should last, experience indicates that the optimum is about 30 minutes. However, some successful leaders advocate 15 minutes or less, while others keep their sessions going until the flow of ideas begins to trickle too slowly.

Dr. Sidney J. Parnes has probably had the widest experience in the conduct of brainstorm sessions. He says: "I have found 30 to 45 minutes best. If more time might be needed, it is a good idea to break up the problem into smaller questions that can be handled in a 45-minute session. If the time is too short, panelists are prone to present only the superficial and more obvious suggestions. It is usually in the later stage when they begin to dig deeper and present ideas which are relatively more unique and potentially more usable."

In the usual type of continuous ideation it has been found that the speed of flow tends to accelerate. For example, the Armstrong Cork Company brainstormed an employment problem for its Macon, Georgia, plant. The first 10 minutes produced 27 ideas. The next 15 minutes produced 86 ideas.

In closing the meeting the leader expresses his appreciation, and then asks participants to keep the problem on their minds until the next day when they will be asked for their afterthoughts.

That's the usual type of program for brainstorm sessions. Of course, there are many variations. For example, Harold E. Schmidhauser of the American Management Association operates on a "stop-and-go" basis by using an egg-timer to measure a three-minute drive period for ideas. Then he stops and gives the panelists a five-minute period of silence for incubation. Then he puts on another three-minute drive, then allows another five minutes for incubation, and so on.

So much for the methodology of the brainstorm session. The follow-up procedures will be covered in the next chapter.

5. *Further evidence of productivity*

As to use of brainstorming by business, here are a few cases among the many: Aluminum Company of America, Armstrong Cork, Bristol-Myers, Christmas Clubs of America, Corning Glass Works, Du Pont, Ethyl Corporation, General Electric, International Business Machines, New York Telephone, R.C.A., Reynolds Metals, Rexall, Scott Paper Company, Taylor Instruments, Union Carbide, U. S. Rubber, United States Steel.

In most companies, the use of brainstorming has tended to spread. For example, early in 1954, the U. S. Rubber Company started this practice in its Naugatuck, Connecticut, plant. Based on the results in that one branch, the head office, in November, 1955, issued a bulletin to the managers of all plants advocating the adoption of similar activity.

The Armstrong Cork Company likewise started brainstorming in just one plant. A year later, an executive was especially assigned to help install brainstorming in the 20 other plants of this company.

In some industrial organizations brainstorming is being used as an adjunct to Suggestions Systems. One panel in General Electric attacked the problem of "ways to improve our Suggestions System so that we will get more and better ideas from our employees." Within 35 minutes, 131 ideas were thought up for that purpose.

Group brainstorming has been adopted by scores of industries in technological phases of operations. A typical example was reported by C. M. Sinnett of the Advanced Development Section of the R.C.A. Victor Television Division. The panel consisted of research scientists. One brainstorming session yielded 200 different ideas for the improvement of TV receivers. According to Mr. Sinnett, "Some of the ideas were excellent, some good, some impractical for the moment." Mr. Sinnett rated this group method of ideation as an improvement over any previous attempt to obtain ideas.

Joseph G. Mason of Minneapolis has been a leader in the application of group brainstorming to technological problems. His manual entitled "Suggestions for Brainstorming Technical and Research Problems" is available on request to the Creative Education Foundation.

In government circles the productivity of group brainstorming has been demonstrated in countless cases. Starting in 1954, several federal departments in Washington, D. C. have adopted this form of organized ideation. All-told over 200 training directors in the national capital have grounded themselves in the principles and procedures involved. At one session of the Training Officers Conference, the problem chosen for brainstorming was: "What can federal employees do to give visitors to Washington a truer and better impression of their government?" Within 30 minutes, 121 ideas were elicited.

At a session of U. S. Treasury personnel, three problems were brainstormed. The first was: "How can we get more federal employees to sell more U. S. Savings Bonds?" Result: 103 ideas in 40 minutes. The second problem was: "How to reduce absenteeism?" Result: 89 ideas in 30 minutes. The hird problem was "How to free bond-selling employees from ffice duties?" Result: 61 ideas in 30 minutes.

The armed services have likewise made increasing use of group brainstorming. Chief John E. Ehrmantraut of the U. S. Air Force Headquarters reported these two sessions, dealing with educational matters: One panel attacked the problem, "What can Headquarters Civilian Personnel Division do to further the growth of Executive Development Programs throughout the Air Force?" This session produced 57 ideas in approximately 45 minutes. Another panel brainstormed this problem: "What can be done to gain and maintain top-level support, at all levels of command, for the new Air Force Management Course for Supervisors?" This panel produced 75 ideas in approximately 30 minutes.

In a course in creative thinking at the Adjutant General's School at Fort Benjamin Harrison, two classes separately brainstormed these two problems: "How can a recruiter improve his prospecting technique?" "What is the best way to develop centers of influence?" In each class approximately 12 minutes were devoted to each question. The results were as follows: One class produced 91 ideas on the first problem and 85 on the second. The other class produced 89 ideas on the first problem and 83 on the second.

Institutes at universities have further demonstrated the productivity of brainstorming. At one of these at the University of Buffalo, Dr. James E. Gates of the University of Georgia presented a problem based on a new type of household tool. Four panels devoted a 15-minute period to each of three specific problems and produced a grand total of 1,322 possible leads to solution.

At the same institute, specific instances were brought out concerning the soundness of seeking quantity in ideation. One case was that of a young engineer in Union Carbon and Carbide. Having taken an evening course in creative thinking, he asked his superiors to let him brainstorm some plant problem. They assigned him one which had long baffled the senior engineers. He organized a group of six associates. Within 30 minutes they jointly thought up 46 possible solutions. When these suggestions were evaluated by the management, only *six* out of the 46 ideas were rejected as unworthy of exploration. Four of these ideas led to the final solution of the problem.

The productivity of brainstorming has been substantially confirmed by classroom experiments in creative problem-solving courses. One series of tests sought to determine the extent to which premature intrusion of judgment tends to inhibit the flow of ideas. For this investigation the class was divided into two groups: (1) A creative, or positive section. (2) A judicial, or negative section. Whenever the creative group suggested solutions to the problem, the judicial group freely voiced its criticism. With half the class thus pouncing on the ideas offered by the other half, the number of suggested solutions averaged less than five per 15-minute session.

For the second part of the test, the judicial half of the class then left the room. The remaining students were forbidden to express any criticism whatsoever. These purely creative groups averaged nearly 50 ideas per 15-minute session.

Repeated results from this type of experimentation have further indicated that, in the same length of time, the average group can produce substantially more helpful ideas when ideation is unhampered than when judgment is allowed concurrently to stifle imagination.

6. *Case histories of results*

Some educators have raised this question about group brainstorming: "Granted that this procedure can produce a maximum of ideas in a minimum time, how usable are the ideas?"

The basic answer is that the usefulness of the tentative ideas largely depend on what is done with them—how effectively they are evaluated and how creatively they are developed. As a rule, the resultant ideas serve only as ore—ore that must be milled and refined. And, by way of analogy, the average gold mine has to dig up four tons of ore to produce one ounce of gold.

However, there are plenty of case histories of tangible resultfulness. The following are a few.

The Richmond, Virginia, chapter of the National Association of Social Workers held a brainstorm session which produced over 200 ideas. Professor Joseph H. Bunzel of William and Mary College reported that at least 50 of these suggestions had been put into operation.

The Greater Lawrence Chamber of Commerce ran a brainstorm session on ways to improve and increase downtown bus service. Paul J. Greeley, Executive Manager, reported that of the 29 ideas developed, 12 were practical and workable. Said Mr. Greeley, "Traffic on the bus lines has steadily increased as a result of using the brainstorm ideas."

A group of members of the Cleveland Advertising Club brainstormed the problem: "Ways to Publicize Opera Week and get as many people as possible to buy tickets." Of the 124 ideas suggested, opera executive Rodney Sutton developed 29 of them with seat-filling success.

At the Rockland State Hospital, a brainstorm session was held to produce ideas for a new in-service course of training for occupational therapists throughout the state. Martin W. Nearly, Maine's Supervisor of Occupational Therapy, reported that, within 30 minutes, the brainstorming generated enough ideas for the resultant manual.

At the Veterans Administration Hospital in Buffalo, one of the many problems brainstormed was this: "How to increase employee participation in the Hospital blood donor program." General Howard Fuller, Hospital Manager, reported: "Many of the ideas were adopted. As a result there was a marked increase in the number of employee donors at this Hospital."

The elders, trustees and deacons of Buffalo's Westminster Presbyterian Church brainstormed four problems. Over 100 suggestions resulted. One idea called for enabling office workers in the neighborhood to make better use of the church. This resulted in a new series of noon services during Advent, with an inexpensive luncheon following each service. These services are now an annual event.

The Catholic Community Church in Neuilly Sur Seine, Paris, France, brainstormed the problem: "How to make our community more livable?" Fifteen panelists produced 276 ideas. Through individual ideation after the session, 82 more suggestions were added. Out of the total of 385 ideas, 70 were found to be usable.

At Harrisburg, Pennsylvania, a series of brainstorm sessions were conducted by Right Rev. Msgr. Robert J. Maher, Superintendent of the Schools of that Diocese. About 120 elementary school teachers participated. The subject was: "How to improve the art of our teaching." Monsignor Maher reported this brainstorming as "highly successful." He added: "I would recommend it for use by other school administrators."

At Denver, Postmaster T. G. Hefner and his management staff brainstormed the question, "What can be done to reduce man-hour usage?" The panel of 12 produced 121 suggestions in 60 minutes. According to an official publication of the Post Office, some of the resultant ideas helped to effect a saving of 12,666 man-hours within the following nine weeks.

When a Pittsburgh department store was unable to move a quantity of embossed chair-covering material, employees brainstormed "other uses" for the fabric. Advertising was then concentrated on these "other uses." As a result, the entire stock was sold out within one week.

Derek Castle of Sydney, Australia, while conducting a class for store executives at Melbourne, had his students brainstorm an urgent problem. "In 40 minutes we amassed 163 ideas. The Managing Director told me afterward that 16 of these ideas were immediately practicable," Mr. Castle reported.

The Rexall Drug Company has been a consistent user of group brainstorming. In one year 58 resultant ideas were successfully put to use.

An H. J. Heinz plant brainstormed the problem: "How can we, as a group, help to increase the sale of products made at this factory?" W. A. Stockfield, of the Heinz organization later reported as follows:

"In less than one hour, over 100 good suggestions were made—not only more but better ideas than our special committee had come up with after holding 10 ordinary conferences."

Another Heinz problem which was brainstormed by two different groups had to do with "ways to get sales promotional materials to our consumers more quickly." One group developed 82 ideas and the other group came up with 103. After evaluation, eight of the suggestions were immediately put to work.

At the Garden Supply Merchandising Convention in Chicago, a brainstorm session on power equipment produced the idea of a trailer with which distributor salesmen and dealers could transport lawn mowers and tractors to prospects' locations for demonstration. This idea was subsequently adopted by Musgrave Manufacturing Company, Springfield, Ohio, manufacturers of power riding mowers. According to D. Murray Franklin, this manufacturer's new bumper-hitch trailer closely follows the idea that came out of the brainstorm session.

At the annual Convention of the Christmas Club Corporation, a group of salesmen asked if they could conduct a brainstorm session instead of indulging in the entertainment program which had been planned for that evening. The bosses acquiesced; but they were barred from the session. The salesmen brainstormed this problem: "New items to be added to the line sold to banks." As a result, after investigating and developing the screened ideas, the company added 12 new products.

With the purchase of a new "Univac," Bristol-Myers needed additional calculation jobs to keep its original IBM equipment profitably in use. A group from the Market Research Department attacked this problem: "What further uses could the Market Research Department make of the IBM machines?" The panelists developed 251 job ideas in an hour.

As part of its creative selling service, Reynolds Metals brainstormed this problem: "New and more convenient ways to package Aunt Jemima Cornmeal Mix." Cloyd S. Steinmetz of Reynolds has reported that the resultant ideas were used in the prize-wining sales-winning package. Reynolds then brainstormed this problem: "Ways to sell this revolutionary improvement to Quaker Oats executives." The result was a new sales plan of comparison demonstrations.

The Swiss Society of Life Insurance at Berne brainstormed the problem of: "How to find new salesmen." The panel produced 225 ideas in one hour. Evaluation determined that 25 were worthy of immediate adoption and that 125 were potentially usable.

Steel Magazine reported that a panel of Chicago-area executives brainstormed the problem: "What can we do about the engineering shortage?" From the 110 suggestions which resulted in the 25-minute session, six recommendations were found to be worthy of adoption.

A panel of Utah Power & Light employees, led by Vice President Joseph E. Cushman, brainstormed the problem of how to make storm-emergency operations more effective and less dangerous. The panelists attacked the sub-problems one at a time—specific problems of emergency operations such as weather forecasts, communications, trouble-desk operation, et cetera. The *Electrical World* reported that nine of the brainstormed suggestions were put into immediate effect and that these ideas "are now bolstering emergency procedures."

An insurance firm in Mexico City brainstormed the problem of improved economy of operations in its new offices. This was done before construction began. Gary Pickard, the manager, reported that, within 30 minutes, the panel produced 109 ideas. Of these, 23 were put into use.

Purchasing Magazine reported that Argus Camera had conducted brainstorm sessions with the entire buying staff to find potential areas of savings in purchasing, and that these sessions turned up practical suggestions which could eventually save as much as $112,000 annually. The magazine estimated that the ideas which were immediately usable would result in savings of $46,000 a year.

A series of sessions at Westinghouse was directed at the solution of engineering and sales-feature problems. Harold F. Simmonds, Westinghouse Project Engineer, says that one result of this procedure was the development of a process which saved the company $32,000.

The New York Times reported as follows: "An East Coast electronics company that regularly brainstorms at every production impasse has cut production time 37% on its last *six* problems . . . A Pennsylvania chemical company recently held a six-minute brainstorming session for tax-saving ideas and wound up with 87. Two of these survived critical evaluation by company tax specialists and resulted in a tax saving of $24,000."

In an effort to economize, the U. S. Navy's Bureau of Supplies wanted to make "one supply ship do the work of three" in the Pacific Fleet's electronic, ordnance and ship repair work. The solution, arrived at through brainstorm sessions, resulted in the de-commissioning of two ships. According to the official report, "The *U.S.S. Castor* was transformed to do the work of three, with a total saving of three million dollars a year in salaries and operating costs."

The Berkeley Heights, N. J., School Board anticipated trouble in getting a bond issue approved for a proposed $850,000 school building. So a group led by Dr. Fred Finsterbach brainstormed this problem: "Ways to cut costs of a new school building, without cutting quality of education nor quality of building materials." Resultant ideas cut the estimated costs down to $735,000—a saving of $115,000.

7. *Indirect values—and limitations*

After teaching many courses in creative thinking at the University of Pittsburgh and at the University of Buffalo—and after conducting many brainstorm sessions—Dr. Sidney Parnes compiled a list of 47 benefits from participation in this type of group effort.

The multiple values were likewise pointed out in an intra-company bulletin of the Ethyl Corporation: "While the main purpose is to generate ideas which it definitely accomplishes, the by-products of such sessions can be many. They can be tools for improving morale; they can provide a method of discovering what people think about supervisory problems; and they can help supervisors gain a better understanding of each other. As one man said after a meeting, 'I gained a new respect for each man in the session. It was a novel and elevating experience to me.'"

One by-product is enjoyment. Here's what a panelist reported, following a strenuous session: "I had a wonderful time. At the end I felt exhilarated; but an hour later I felt tired. It is a fatiguing experience, and yet it's fun. The usual conference is far less tiring. It's about the same difference as between golf and tennis. In golf, you just amble along, but in tennis you sweat. I like strenuous effort—that's why I enjoy brainstorming."

A most valuable effect on participants is improvement in initiative. In most cases, they come into their first brainstorm session with their imaginations flabby from disuse. As a result of their brainstorming experience they become inclined to tackle problems more enterprisingly as well as more creatively.

Such personal development is a common reward of brainstorming effort. On this point, the administrative head of a large firm reported: "Three of our panel leaders have been advanced to far higher posts—posts for which they probably would not have qualified, at least for some time to come, if it had not been for the personal development which resulted from their brainstorming activity."

Another indirect value is that the systematic use of group brainstorming can help insure against failure to think up improvements—improvements which obviously should be made. This point was inferentially brought out by the "I've Got a Secret" television show which featured the Quartermaster General of the Army. His secret was that he had saved $1,600,000 for the taxpayers within the last two years. How? By thinking up an idea. The idea was to eliminate watch pockets from Army uniforms. Asked how he got the idea, he said that it came to him by accident, while chatting with some cronies.

In all probability, that idea could have started to save money for taxpayers many years ago—if the operational plan had included a systematic use of group brainstorming. In that event an obvious problem would be, "What could be done to make army pants more cheaply without sacrificing quality?"

If this problem had been assigned to a panel under a well-trained leader, he would undoubtedly have spurred the session with questions from M.I.T.'s check-list—including this question; "What could be eliminated?" When asked a question like that, any group would have been almost certain to hit on the idea which accidentally came to the Quartermaster General 25 years after pocket watches had given way to wrist watches.

* * *

Despite the many virtues of group brainstorming, individual ideation is usually more usable and can be just as productive. In fact, the ideal methodology for idea-finding is a triple attack: (1) Individual ideation. (2) Group brainstorming. (3) Individual ideation. And, of course, each of these procedures can be far more productive if the deferment-of-judgment principle is consistently followed.

And it must be admitted that the adoption of a program of group brainstorming sometimes turns out to be a flash in the pan—usually for these reasons:

1. *Faulty Operation*—failure to follow the procedures based on 33 years of experience.
2. *Exaggerated Expectation*—failure to realize that miracles are not in the wood.

In summary, let's put group brainstorming in its place. For one thing, it is only one of the phases of idea-finding which, in turn, is only one of the phases of the creative problem-solving process.

And let's bear in mind that group brainstorming is meant to be used—not as a substitute—but as a supplement, and especially in these three ways:

1. *As a supplement to individual ideation:* Individual effort is an indispensable factor in creative problem-solving. Brainstorm sessions should never be considered as a substitute for such effort. Group brainstorming serves solely as a supplemental source—a means of generating a maximum number of potentially usable ideas in a minimum of time.
2. *As a supplement to conventional conferences:* The

usual conference is necessarily judicial, both in spirit and in function, and therefore relatively unproductive of ideas. This does not mean that brainstorm sessions should supplant conventional conferences. It merely means that conventional conferences can be profitably supplemented by an occasional brainstorm session—if and when creative thinking is the primary purpose.

3. *As a supplement to creative training:* In over 1,000 courses in creative thinking, group brainstorming has been used as one of the teaching methods. This type of self-demonstration does much to induce a more creative attitude and to develop fluency of ideas. By the same token, participation in brainstorm sessions can help improve the average person's creative ability, not only in group effort, but also in individual effort.

And let's bear in mind these further limitations about group brainstorming:

1. *Some sessions can produce final answers*—but only if the problem is simple enough. One example of this was finding names for Armstrong Rugs.

2. *Some sessions can provide planks for plans.* An example of this was the new program for the School of Pharmacy at Columbia University. In that case, a complete plan came out of the 350 ideas which brainstorming produced.

3. *Some sessions can produce check-lists.* Such check-lists can serve as working guides to stimulate further constructive thinking. For example, 500 suggestions for teaching American history more creatively came out of brainstorming at the University of Buffalo, with 60 teachers of American history as the panelists. The resultant check-list has served many a teacher as a working guide.

4. *Some sessions can provide approaches* to subsequent solution of problems. This is especially true when the problem is necessarily complex—as in technological research. In such cases, brainstorming can supply enough ideas by way of leads so that the most promising paths to ultimate solution can be more quickly found in advance, thus saving time and money.

In contrast to occasional cases of short-lived use of group brainstorming, let's look at the record of Dr. Dan Pursuit of the University of Southern California. He started over seven years ago to use this procedure on problems of his university, his community and his state. He has kept this up ever since to an extent that speaks for itself in a letter he recently wrote: "During the past year I have brainstormed before a wide variety of groups, including a high-school student council, four Federal Management Seminars, a number of professional associations, several groups of government officials from Pakistan, and various service clubs. Next week I will be conducting brainstorming for the City Manager and department heads of the city of Beverly Hills. And at our Youth Studies Center we are constantly using brainstorming to develop new research projects for us to conduct under grants from the Ford Foundation."

Dr. Pursuit's record is presented as time-tested proof that, when properly conducted, group brainstorming can be used on almost any problem—and profitably so, within the limits that this chapter has indicated.

TOPICS

1. Why is a combination of group ideation and individual ideation desirable?
2. "In what ways can we combat juvenile delinquency?" Wouldn't this be a good problem to brainstorm? Discuss.

3. How can brainstorming be used as an adjunct to a company's suggestion system?
4. What is the usual result of the controlled experiment in which a purely creative idea group competes against a group where criticism is allowed?
5. "Mixed brainstorm groups are usually doomed to failure because of the inherent rivalry between the sexes." Do you agree? Why or why not?

EXERCISES

1. Write a pre-brainstorm memo (as suggested in this chapter) for the following problem: "What new improvements could be made on the modern kitchen sink?"
2. List the different types of guests you feel would add most to the productivity of a brainstorm session on the above problem.
3. Make up a list of 10 "category" hints which the panel leader might use during said session.
4. Break down the following general problem into sub-problems suitable for brainstorming: "In 1954, French Prime Minister Pierre Mendes-France's efforts to promote the drinking of milk throughout his country met with limited success. What might he have done to achieve maximum results?"
5. Brainstorm one of the sub-problems developed from the foregoing exercise.

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JUMP

Forty-eight sleepless hours with America's top new-product idea man

By John Grossmann

DAY ONE
6:30 A.M.
The mission

NEWTOWN, OHIO, ON THE OUTskirts of Cincinnati. The sky's still dark on this drizzly winter morning, but innovation guru Doug Hall's headquarters—a 157-year-old, three-story, 29-room structure immodestly named the Eureka! Mansion—is already a furnace, glowing from every window. Inside, Hall reviews his client notes, prepares not one but two pep talks, and mentally runs through a series of group exercises designed to perform the equivalent of business magic: to pull new-product ideas out of what looks like thin air.

Hall is 38. Before his 1991 launch of Richard Saunders International (RSI), named after Ben Franklin's pen name, he spent 10 years at nearby Procter & Gamble Co., where he became the company's first and, so far, last "master marketing inventor." When he hung out his own creativity shingle, he promised

PHOTOGRAPHS: ERICA FREUDENSTEIN/SABA

START
Your Business

clients delivery of 30 commercially viable ideas in 30 days. (In contrast, P&G's expected new-product development cycle was three months.) Nowadays, his techniques refined, he inspires his clients to come up with similar results in *3* days. Corporations such as PepsiCo (which has made 12 visits to the Eureka! Mansion), AT&T (10 visits), Nike, and even Batesville Casket send employees to the mansion for one-, two-, and three-day sessions to invent new products, paying RSI as much as $150,000 a visit—a McKinsey-esque rate that's at least five times what most "creativity facilitators" ask. The average American home now contains 18 brand-name products or services that, according to Hall, RSI helped develop or reposition.

Due through the mansion's door on this day are employees from Celestial Seasonings Inc., a $75-million-a-year company with the lion's share of a flattened market, herbal tea. Celestial wants to at least double its sales in the next few years and knows that to do so, it will need to branch out well beyond its artfully boxed teas. It knows, as well, what most companies are being forced to learn: that every business's vitality is built on being newer and better, and that staying power in today's market means following up one success with another, and another—and fast.

Eager to capitalize on its well-loved and well-established brand, Celestial has given Hall a dream assignment: help invent something—anything—that appropriately leverages its leadership position.

This is the diary of how Hall does it, step-by-step—with Hall annotating the logic behind his methods along the way. This, Hall argues—this by now well-tested mixture of play and sensory overload and analytical rigor—is the alchemy of creation. He trusts it so much that he has struck an entrepreneurial bargain with Celestial: he has waived his princely fee in return for a fixed percentage of sales on any mansion-launched products. In other words, Hall knows as he is about to begin this session that if he doesn't get results, he'll have worked for nothing.

He has two days.

7:01 A.M. Preparing the props

The Eureka! Mansion bustles with activity. Near the kitchen by the back door, a couple of Hall's so-called Trained Brains are filling balloons on the nozzles of two in-house helium tanks. In the spacious living room, other Trained Brains are loading a cache of tommy-gun-like Nerf Ballzookas, stuffing scores of bright yellow foam balls into the revolving five-chamber magazines. A 100-CD jukebox booms out high-energy oldies: "Wooly Bully," "Gimme Some Lovin'," "Wipe Out."

In the front hallway a caterer sets out breakfast-buffet fare. At the foot of the elegant staircase, a Dixieland quartet dressed in gold hats and bow ties warm up on trumpet, trombone, guitar, and banjo. The loaded Nerf guns get piled in the middle of the living-room rug and hidden beneath a blanket. The collective pulse thrums ever faster.

7:50 A.M. Pep talk

As Celestial's 8:30 arrival time draws nearer, Hall gathers his charges—a twentysomething-to-fortysomething mix of Trained Brains—in the mansion's living room and addresses them as if he were a coach before a big game. "It's not often that you find an entire category invented by one person," he says, pointing to box after box of Celestial Seasonings teas on shelves placed center stage, in front of the fireplace. Hall sketches the company's history: It was founded in 1970 by Mo Siegel and a partner, who initially picked their own herbs for their teas. It was sold to Kraft in 1984. Siegel then traveled the world with an eye toward philanthropy. Kraft sold the company back to its original management, which welcomed Siegel back in 1991 as chairman and CEO.

Hall gives his talk standing in front of an as yet unmarkered Panasonic whiteboard. He's wearing jeans and an untucked blue-and-white-striped short-sleeve shirt. His feet are bare.

At P&G, Hall was notorious: he was the guy who invented dress-down days on his own; the weirdo with all the stuffed animals in his office, who played music so loudly that the people in nearby offices had them soundproofed; but also, the guy people called when they wanted some help coming up with ideas. Hall loathed those closed-door, sit-around-the-conference-table sessions. He soon discovered that he came up with better ideas by combing the bargain-book bins at the local bookstore or walking the aisles at a farmers' market. In 1991 he left P&G, bought the mansion, and began turning what had been a bankrupt bed-and-breakfast into an idea factory.

"The people up top in the companies we work with can be pretty conservative," Hall continues telling his team. "They say they want big ideas, but they get scared of them. Celestial, though, is willing to take on anything. Licensing arrangements with other companies are possible: licensing others' names, licensing out the Celestial name." Suddenly, Hall kicks himself into a higher gear. "Really *push* for ideas that can promote an *emotional* reaction. It's a wide range—from Sleepytime to Fast Lane."

The group's pent-up exuberance begins to bubble up.

"Can we drink coffee today?" someone wisecracks.

A few minutes later two taxis are spotted parking by the front door.

The cry goes out: "They're here!"

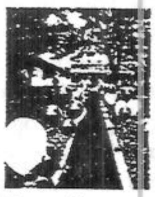
8:31 A.M. The clients' arrival, greeted by Trained Brains

Brassy Dixieland rhythms fill the mansion. Two veteran Trained Brains, Hannah Buchanan and Eric Schultz, pair off in a swing-your-partner, elbow-locking dance step. "Trained Brains"?

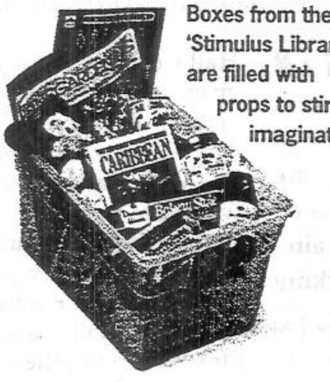
"The interesting thing about

A DAY IN THE LIFE OF THE MANSION

Hall's Eureka! Mansion is an environment tooled exclusively for fun.



The red carpet is rolled out for clients, whose companies pay up to $150,000 a visit.



Boxes from the 'Stimulus Library' are filled with props to stir the imagination.

Trained Brains," Hall will explain later about the facilitators, "is they're not trained at all." Among the 100 or so freethinkers in his Rolodex: a food chemist; a math tutor; a cookbook author; Tom Wilson, the cartoonist who draws "Ziggy"; and a TV- and radio-commercial voice-over artist. Some are flown in for sessions. "They tend not to be agency creative directors or the classic creative people you might think of but, rather, entrepreneurial types, people who run their own businesses, people who can both dream and package their dreams into reality," says Hall. "They have the ability to provoke and stimulate."

Now the front door opens wide, and in troops the Celestial Seasonings crew: five employees, one former Celestial vice-president of marketing, and Mo Siegel, who holds a tall Starbucks coffee in a gotta-have-it grip. The group flew in from Boulder the night before. For them, it's 6:30 mountain time, and they're all a bit bleary-eyed.

Hellos. Handshakes. Hall and Siegel hug. Everybody grabs something to eat and drink. The band plays on.

Were it not for the rain, a red carpet would have been rolled out the length of the walkway to the door, festooned on both sides with balloons. Trained Brains would have stood by, filling the air with soap bubbles.

Had Siegel booked the Eureka! Mansion during the summer months, the welcome would have been even more spirited. In warmer weather, clients reach the Eureka! Mansion by pontoon boat, soaked to the skin after gleefully defending themselves with water cannons against a sneak-attacking mansion staff—Hall on a JetSki, others firing from a speedboat. That baptism by fun on Hall's 65-acre lake begins a kind of corporate detoxification he's found crucial to creation.

8:57 A.M. Success defined and the evils of brain sucking

Hall's official welcome is given with everyone gathered in the living room, which is a cross between PeeWee's Playhouse and a frat-house basement. Two pinball machines flank an arcade road-rally game topped with an enormous stuffed Mickey Mouse. Hall's welcome always includes an around-the-room introduction, in which each person tells his or her name and also provides some personal revelation. Today's question: What's your all-time favorite toy? Past queries: What was your worst vacation? Any scars, and how did you get them? The aim: to lubricate people's tongues, ask them to talk about themselves. Then Hall gets down to business.

"Our goal is to come up with wicked-good ideas," Hall says to the assembled. "Big, hairy ideas that send fear into the marketplace. We need things that are really different, the sort of things that create conversation, as in 'Man, did you hear about that?' Ideas that are not new and different are commodities. *The Harvard Business Review* reports that you increase your chances of profitable success three to five times if you're extremely new and different." What Hall's doing is setting the bar, defining what will make the next two days a success. (That's important, Hall says. "I'm trying to get people to raise their sights, to dream of the huge-step change, not incremental ones.")

"But there's a challenge," Hall continues. "As we become intelligent, practical adults we lose the ability to see those new thoughts. As our education increases, our imagination decreases. The classic way of creating new ideas is the brain-draining, or brain-suck, method of creativity. You use your brain like a library. You just have to make a withdrawal. Instead, we're going to take your brain and use it like a high-speed computer. We're going to program it, feed it with stimuli. And out of that will come what we call the Eureka! Stimulus Response. If you're laughing, you're more likely to break all that education and come up with a wicked-good idea." Hall moves to the blanket-covered pile in the middle of the floor. "So we're going to show you what we mean when we say fun is fundamental."

Hall yanks the blanket off the stockpiled Nerf Ballzookas and passes out guns like a revolutionary. In seconds, the room's full of Rambos, blazing away at anybody and everybody.

'PEOPLE SAY THEY want big ideas, but they get scared of them,' says Hall. 'Celestial, though, will take on anything.'

Is this any way to come up with $100-million ideas? The pixielike Hall will tell you, Yes! and then maybe have you sit on a whoopee cushion. "I do that stuff for a simple reason," says Hall. "I get better ideas. Breakthroughs are going to contradict history. You have to break rules. And you have to give everyone overt permission to break rules."

9:32 A.M. Tactic: The Mind Dumpster

The day's first task is introduced as a Mind Dumpster, or less delicately, a Metamucil of the Mind. Purple index cards are passed around, and on them everybody is to record a first flushing of ideas, in brain-sucking fashion, with no more stimulus than the theme from *Gilligan's Island* playing on the jukebox. One idea per card. The possibilities: New-product categories. Target audiences. Sensory experiences related to tea. Interesting words that come to mind. *(Continued)*

PHOTOGRAPH: ERICA FREUDENSTEIN/SABA

Anything. The point: pluck the low-hanging fruit, which is rarely the sweetest. Removing those first-blush ideas frees the mind for bigger, better, more daring concepts on harder-to-reach branches.

Hall stresses the day's creed: No idea is silly. "Today I ask you, as we work, to respect all the newborn ideas," he says. "Tonight and tomorrow we'll strangle the newborns. Strangling ideas is easy. What's hard, what takes courage, isn't finding the problems in an idea but figuring out a way to take the outrageous and push it even further."

9:45 A.M.

Tactic: The Mind Dumpster II

One or two songs past Gilligan and the Skipper, all the cards are turned in, and it's time for the second mind dump of the exercise, this time in small groups.

Hall and others have found that small rather than large groups tend to generate more ideas. Four or five people per group seems about right. "Any more than seven, and they're not as effective," say Arthur VanGundy, a creativity consultant and a professor of communication at the University of Oklahoma. Hall also suspects that the physical proximity of groups may play a role. Rather than isolating them in separate rooms, he generally prefers them nearly on top of one another, within earshot. Sometimes phrases or ideas will blow like seeds from one group to another.

Sitting catch-as-catch-can on couches, on the arms of chairs, and on the floor, the members of each group huddle around a formatted sheet of paper on a double-sized clipboard. Like everything at RSI, from the Eureka! Mansion itself to Hall's names for many of his idea-sparking exercises, these so-called Flapdoodle sheets are trademarked.

"You have only three or four songs," instructs Hall, once again employing the jukebox as a clock. The focus remains unfettered—it can encompass any stretch on tea or Celestial's brand equity. One group's scribe is Trained Brain David Wecker, a resident loose cannon and the coauthor, with Hall, of *Jump Start Your Brain,* the book that spells out the Eureka method, and the newly published *The Maverick Mindset.* (See Resources, page 123.) Wecker's got a stack of purple Mind Dumpster cards to goose the group should the outpouring of ideas be less than geyserlike. But that proves unnecessary. He's soon scribbling away with his marker, adding ideas helter-skelter on the page like so many mud balls thrown against a wall.

"Workout tea."

"Tea that keeps itself hot."

"Hotsy-totsy."

"Hotsy-potsy."

"A line of greeting cards."

"Bath products."

"Spa pampering."

"How about tea bags that fit over showerheads?"

"Teas that taste like foods you crave."

Imagine warming up on a doubles tennis court, batting balls back and forth with ever-increasing vigor. Or spin. At the Eureka! Mansion, you can hear the ball crossing over the net.

"Fiber tea."

'YOU NEED A PLAYFUL atmosphere,' says VanGundy. 'Groups that are laughing are the ones producing the best ideas.'

"TNT."

"There's your super tea."

10:05 A.M.

Tactic: 'Bulging'

When the music stops, each group shares the ideas on its Flapdoodle sheet. A Trained Brain rewrites them on the facsimile-producing Panasonic whiteboard, also recording any so-called bulges. A bulge might be a related idea from another group that's worth mentioning now or, just as likely, any new notions sparked by a just-posted idea.

"We want to sell a tea bag with Colorado springwater," reports Hannah Buchanan. "And how about a portable steam mister, called Self Es-Steam. Herbal tea bags for a vaporizer…"

Group by group, the raw ideas pour out—several dozen of them—from just this first exercise, some with early swipes at product names: kids' drinks (Tea 4 Tots, Lip Ticklers), herbs for cooking, a college survival kit, breath-freshener tea, fortune-cookie-like messages on tea bags. ("What if they could be made to appear by adding hot water?" somebody says—a bulge.) Claps and cheers follow each presentation.

"The applause is critical," says Hall, identifying it as one of several reasons for the group reports. "It makes them feel like they've won, and in today's world people don't feel like they've won enough." The group reports also allow for the bulges. Last, the additional volume of ideas shared during the group reports helps "stretch people's minds to help them think of other things going into the next exercise."

When one group's summary lists "Ginseng Magic" and "Ginseng Power" as possible ideas, CEO Siegel interrupts, explaining his desire to take a run at the fast-increasing market for ginseng, a traditional wonder herb harvested as a funny-looking root and long believed to have both energizing and calming powers.

"We have a product called Ginseng Plus, with a Chinese bridge on it, which doesn't mean anything to anybody," he says, rustling up the artwork for the proposed blister-pack display for the product, which is sold in cap-

PHOTOGRAPH: ERICA FREUDENSTEIN/SABA

sules. "We're playing with the concept of Dr. Woo's Ginseng Magic."

For a company its size, Celestial Seasonings does a remarkable amount of ongoing in-house new-product development and daily consumer testing, by tapping the annual stream of more than 60,000 visitors who take its factory and office tour, eat in the Celestial Cafe, and browse in the company's gift shop. So why hire Hall? "Because he and his Trained Brains don't think like we do," explains Siegel. "And it really helps to spend a couple of days out of the office, just thinking."

10:37 A.M.
Tactic: 'Smash association'

The next exercise is called 666. "This is where you smash-associate things together," says Hall, as he remixes the groups and gives each a set of three colored dice and sheets of paper with three six-item lists under the headings red die, white die, and blue die. The items on the lists are categories designed to get people thinking. The gathering closest to the front door rolls a white six ("New Preparation Process" on the 666 sheets), a blue three ("Picnic/Beach"), and a red six ("Spirited"), and tosses those stimuli into the group's mental blenders.

"Smash-associating is a structured way to do lateral thinking, which stretches the mind. It's like a balloon expanded: it never goes back to the same shape. Like a football coach calling plays, I'm setting up for creative exercises to come later. First I'll stretch their thinking from a product standpoint, focusing on occasion, target audience. Then I might hit them with the picture boards, where I'm focusing on getting them to deal with emotions and phrases and language. Now I'm getting the marketing side. It's setting up both the running game and the passing game," says Hall, defining the ground attack (the running game) as the grind-it-out product stuff and the passing game as the big-bang marketing stuff. He's found it's often best to alternate product exercises with marketing exercises. "If you do too many product exercises in a row, people will get an irrational mind-set when they're designing products. If I do too much emotional stuff, I'll have a hard time getting them to deal with reality."

Though largely free-form, the mansion exercises are anything but free-for-alls. They are, in fact, far more choreographed than most clients ever realize. Hall's model is Disneyland, "where things happen invisibly, where the characters just seem to show up." At the mansion, everything's designed to keep the client focused on new ideas. The food seems to be stealth-catered. Clients never see it arriving; their noses tell them it awaits.

While the 666 dice roll and the ideas fly, two artists (more of Hall's on-call virtual company) roam about, sketching on their own or on request. Maybe a package for an intriguing product, or perhaps a character to help pin down a concept, like the ginseng dragon taking shape on one sketch pad. "The sketches allow us to talk in a different dimension," says Hall. "Plus, they give incredible reinforcement to the group. People feel so good to be able to present an idea that way."

Meanwhile, Hall listens with one ear while he types at a computer to the right of the fireplace. Hosting about two dozen clients a year has taught him the importance of staying ahead of the creative avalanche; he's already winnowing through the day's ideas to get a running start on the evening's job of fleshing out the best ones into market-worthy concepts.

11:04 A.M.
Tactic: A picture's worth a thousand words

The next group task plays off visual stimuli. Sandie Glass, vice-president and creative director at the mansion, passes out sheets of poster board featuring a wide assortment of pictures cut from magazines. Below each is printed a ladder of blank lines. Members of the group are instructed to list the words and phrases that come to mind when they look at the pictures. One board shows a picture of a lemon peel. Another, a sports-utility vehicle on a mountain ridge with a waterfall in the background. A third, a pack of Juicy Fruit gum. Hall's instructions: "Think refreshment. And raise your hand when you want a new board." Hall's intention: employ the pictures as a visual thesaurus.

As adjectives and phrases *(tangy, tingly, invigorating, summer, blend of fruit)* accumulate on the poster boards, sample cups of herbal iced tea appear on trays. In the pursuit of wicked-good ideas, the Eureka! Mansion leaves no sense untouched. Up the back staircase at the mansion there's a storage room (called the "Stimulus Library") packed floor to ceiling with plastic bins of categorized baskets of stuff—hands-on stimuli for generating thoughts off the beaten track. The stackslike repository includes bins marked *Ugly Products* (for instance, brown-paper coffee filters), *Ways to Close* (Ziplock bags, buttons,

TRICKS OF THE CREATIVITY TRADE

'If corporations would double their food budget, they'd get more than double the return,' Hall says.

The mansion's living room is a cross between PeeWee's Playhouse and a frat-house basement. 'Stuff' is everywhere.

High jinks are commonplace. At some point in most sessions, Nerf weaponry looms large.

magnets), and *Weird Science* (Edge shaving cream, Alka Seltzer, relighting birthday candles, candy necklaces).

In part two of the exercise, the various word ladders help launch product ideas and sometimes names, such as Tea Splashes, tiny bottles of fortified herbal essences that can be added drop by drop to various foods and beverages.

During the group reports, Siegel can't wait to hold up a just-sketched rendering of a distinctive package for a product he's eager to find a way to sell. "I really like this a lot," he says, explaining how the package works to overcome some marketing obstacles. The discussion leaps to names. From around the room, half a dozen suggestions ring out. Like a fashion photographer posing a model, Hall prompts, "Less descriptive, more heart and soul and feeling."

There's another burst of names. And more discussion of the would-be product, which Hall knows Celestial has been wrestling with for a long time. Even with the smell of a lunch buffet wafting from the back kitchen, minds remain focused, and the discussion is animated. A different creativity maven, fearful of derailing the advancing train of thought, might keep everyone on track a good while longer. Hall calls a break for lunch.

Another lesson he's learned: don't try to get the whole idea in one pass. Invention, he's found again and again, tends not to be linear. "People always talk about getting it right the first time," Hall explains. "That's great for manufacturing but lousy when it comes to inventing. These things require some iterations. Birth is a messy process." Often, a word, a phrase, or a concept born in one exercise will suddenly reappear again later, but then it will really soar with a slightly different spin. "In fact," stresses Hall, "it's by not trying to get the whole idea at first that you get more ideas."

12:04 P.M. Lunch, and the ROI of a decent menu

The Dixieland band strikes up once again. Siegel, who's wearing a polo shirt, black jeans, and cowboy boots, changes into sneakers and heads to the back of the mansion to a small room with exercise equipment. Almost everybody else heads for the food, which is plentiful and hot (a piquant chicken dish, rice, a good tossed salad, plenty of gourmet brownies and cookies) and intentionally a notch or two above the typical cold meats and potato salad. A restaurant-style espresso machine awaits the java junkies. There's also wine ("Vintage bottles, not the just-in-time stuff") from the wine cellar. Hall uses good food and wine as rewards, tools for making everybody feel special.

"If corporations would double their food budget, they'd get more than double their return on investment," Hall says, and adds that he'll sometimes add an effervescent stimulus to a late-afternoon exercise, promising a bottle of champagne to the group that comes up with the best ideas. "In some corporations the people are competitive. If that's the spirit they've got, we'll work with that."

Some follow lunch with a stroll through the backyard's English-style formal garden, where creative sessions are sometimes held in the summer months. A few step up to the pinball machines. After about an hour, everyone drifts back to the living room.

1:14 P.M. More exercises

Hall silences the living-room din with a whistle. It's back to the business of inventing—there are four more group exercises before half the Celestial folks need to head out to catch their plane back to Colorado.

"It takes four or five hours just to open up their minds," Hall stresses, going on to tell about one client who requested—and did not get—a change in the mansion MO. "They wanted to brainstorm for 35 minutes and then spend the rest of the time developing the ideas. Thirty-five minutes," says Hall, spitting out the words like spoiled milk. "You're talking $100-million products. Can't you spend at least eight hours on the open-ended stuff? We really push people here. What often happens is, late in the day when they think they've thought of everything they can, all of a sudden out pops another idea."

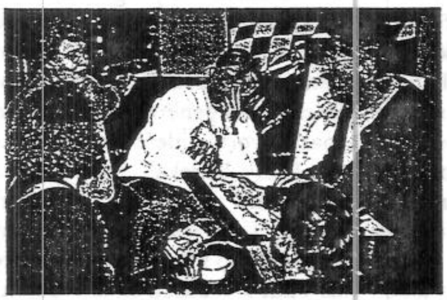
The afternoon speeds along with exercises now targeted toward specific areas, like ginseng or an intriguing "spa in a box" concept—products that would consist of a particular tea packaged with related items that extend or amplify the tea-drinking experience. What would the concept be called? What, besides tea bags, might go into the boxes? Each group gets a boom box, an audiotape of soothing nature sounds, a basket from the stimulus library brimming with sample "rest and relaxation" products, and a couple of different boxes of Celestial Seasonings teas.

A session on dessert products coincides with afternoon tea (guess whose?) and mounds of scones and chocolate-dipped strawberries. The ideas keep coming.

(Continued)

THE IDEA FACTORY

Ben Franklin (whose pseudonym gives RSI its name) is Hall's spiritual mentor.



Hall likes to gather people in tight groups, which he keeps close together.

If Hall needs something to suit his process, he invents it. Here, his trademarked Brain Brew coffee.

The late-afternoon arrival of the airport-bound taxi prompts Hall to reach for parting gifts. He passes out Eureka! Mansion T-shirts, bags of RSI's Brain Brew coffee, and copies of his books to the four departing Celestial employees. "We'll break till 6 o'clock," Hall announces to the remaining attendees.

5:10 P.M. Time-out

Hall, his staff, and the Trained Brains descend the steep stairway to his candlelit wine cellar. Hall pours a California champagne into paper cups and toasts the day's efforts. "We've got gobs of stuff. Some of it's in scrambled pieces, but we're in good shape. They want to start earlier tomorrow morning, though, so they can catch an earlier flight. We can do that, but it's going to be a long night," he announces to the core group who will stay on after dinner, adding, "Sleep is for wimps."

6:00 P.M. Dinner

Dinner is fortifying comfort food—meat loaf and mashed potatoes—that almost everybody carries back to the living room, where the conversations, inevitably, keep circling back to the bigger ideas that bubbled up earlier in the day.

"I really like the idea of that," says Siegel, restating his affection for the artist's package design.

"A breakthrough there," says Hall, "and the company triples in size."

7:14 P.M. Tactic: Categorize ideas, write product concepts

The night's work is task oriented. David Wecker's at a computer in the mansion's library. His first assignment: conceptualizing a new line of Celestial Teas, a faux-British offering called Royaltea. One room back, Eric Schultz is positioning an entirely new beverage for Celestial. Upstairs, in her office, with New Age music playing in the background, Sandie Glass works to corral and expand upon the far-ranging ideas generated for those themed kits. Everybody else is in the living room, taking turns punching up jukebox favorites while working to bring a bit of order to the morning's intentionally chaotic upwelling of ideas. That group includes Trained Brain Jeff Stamp; Mo Siegel; Lindsay Moore, Celestial's senior director of innovation and creativity; Keith Brenner, a consultant specializing in strategic planning and formerly Celestial's vice-president of marketing; and mansion apprentice Sean McCosh.

While McCosh sifts through the stack of purple Mind Dumpster cards, pulling out any remotely viable notions that went unmentioned during the day's sessions, the others begin separating the wheat from the chaff on the more than two dozen Flapdoodle sheets. Hall's instruction: write any promising near-term idea on a red index card; longer-term notions or those requiring licensing go on yellow cards. Hall then ducks out to visit a student art show at his daughter's school.

9:00 P.M. More sifting

Hall returns an hour and a half later, dressed even more comfortably than before in red shorts, an oversize yellow T-shirt, and a blue University of Maine hockey cap worn backwards. Again, he's got bare feet. Arranged on the living-room rug are seven rows of index cards, each row 8 to 10 cards deep: the cards represent about five dozen ideas with varying degrees of marketplace potential, generated in less than 12 hours. The Eureka! Mansion has worked its preliminary magic—something it's becoming well known for. A couple of years ago, the University of Oklahoma's Arthur VanGundy compared various idea-sparking strategies with Hall's Eureka! Stimulus Response methods. VanGundy asked his groups and Hall's to come up with different ideas for snack foods. Hall's groups outperformed all the others, generating not only more ideas for new products but also far more meaningful ideas (as judged by a panel of food-industry experts). Most striking was the gap between traditional, unstimulated, brain-draining groups of four, which generated an average of 6.5 marketworthy ideas in 45 minutes, versus Hall's Eureka! groups, which averaged 36.3 meaningful ideas, or 558% more. "I was totally amazed," says VanGundy, who's been known to hire some of Hall's Trained Brains for his own creativity sessions. "I'd hold Doug up as a model of the principles I've been talking about for years."

Asked for three must-have ingredients in running a successful idea-generating session, VanGundy thinks a minute and replies: "One, people must have a belief that anything is possible. Two, you need a climate that's conducive to creative thinking, one that results in a playful atmosphere. Groups that are laughing and having the most fun are the groups producing the most ideas and the best ideas. Three, it's best to use a lot of different types of stimuli, which are both related to the challenge and unrelated to the challenge, to help trigger new associations and generate out-of-the-box thinking."

Just as crucial, he stresses, is avoiding the mistakes commonly made by corporations when they try to throw the creativity switch, all too often by rounding up the usual suspects and tossing them into a conference room for a couple of hours and ordering in sandwiches. "You don't want the same people who work together and meet together all the time," says VanGundy. "If you want to do something truly different, you have to meet differently." Meeting off-site is best. VanGundy recommends bringing in people from different parts of the company, people with a diversity of viewpoints, making sure to salt the group with fluent idea generators. Another creativity killer: starting with a whole bunch of criteria. "Companies will often start idea sessions by listing criteria for the new product or process. That places constraints on your thinking and forces people to limit their ideas. It creates a climate in which, instead of diverging in all sorts of directions to create as many ideas as you can, you're continually converging to evaluate all the ideas to see if they satisfy the criteria. It limits the number of possible ideas you can come up with and probably the quality of the ideas as well. There are three times you can judge an idea: now, later, and never. Now is not the right time."

Equally important, he feels, is to think of the emerging ideas in a new way—not, at this early stage, as new products or solutions but as more stimuli. "I like to stress that ideas are the raw material of solutions, potential stimuli for the high-quality ultimate solution," says VanGundy. "Seeing ideas as stimuli rather than as ultimate solutions also relieves people from the pressure of having to come up with perfect ideas or solutions." Which, of course, helps generate even more ideas. The result: a self-feeding fire.

10:58 P.M. Editing the concepts

The next blasts of creative work in the Eureka process are rarely seen by the client. Celestial representatives Siegel, Moore, and Brenner call it a day at about 11 o'clock and head back to their nearby hotel. On networked computer screens throughout the mansion, the day's raw ideas are being molded and sometimes melded into new products with marketable benefits and catchy, memorable names. In Hall's words: "This is where the rubber meets the road."

Soon after midnight, Hall stretches out on the living-room carpet near the index cards, along with fresh printouts of several of the product-concept first drafts. Pencil in hand, he reads Glass's renderings of the tea-plus-other-items collections. For instance: "Sleepytime Collection—This kit helps quiet down the day. Tea bags with a hint of cinnamon are designed to be brewed in a cup of hot milk. Lavender-aromatherapy-spray atomizer and a scented, ultrathin sachet that you place between your pillow and pillowcase to enhance your sweet dreams." The thing that's still missing, Hall knows, is a defining umbrella word.

"What do we call these things?" he asks aloud about the "tea plus" kits, glancing at the index cards for help. Everyone keeps coming back to the word *kit*, so Hall heads to the library and returns with a copy of J.I. Rodale's *Synonym Finder*. "Kit," he reads aloud. "Set, collection...implements, utensils, gear..." Nothing particularly exciting. Then his eye falls on a nearby entry: *kaleidoscope*.

"I like it," says Stamp.

"It works," agrees Schultz.

Hall pencils it in: "Celestial Seasonings Kaleidoscope/A Celebration of Herbal Sensory Collections."

1:00 A.M. Burning the midnight oil

The mansion's still lit up like a fraternity house at homecoming, and it's nearly as loud. At times like this, with Hall's high-decibel musical inspiration also being piped through speakers outside by the basketball and volleyball courts, the mansion's rather incongruous location in an industrially zoned area proves to be a blessing; there are no neighbors around to complain. "We don't try to get everything perfect at this stage," Hall explains. "It's more like M*A*S*H surgery."

3:50 A.M. Tactic: Make it visual

Hall faxes the day's work to WBK Design, in Cincinnati, where head designer and managing director Steve Klein heads a team poised for a six-hour turnaround of computer-generated package designs. Klein and his artists have already scanned Celestial logos and dozens of images into their computers. When Hall finally sets them loose, *loose* is the operative word. "I have to give them the core direction, but if I define it too much, it becomes color by numbers. I used to define it, and they'd give me pretty much what I said. But then I'm not getting the value of these incredibly talented artists, or of the writers, because it works the same way with the concept writing. It's not fun assembling a house from Lincoln Logs. It's much more fun when they're given the freedom to do something great. The basic mission is *'Wow* me.' "

Hall doesn't bother to go home. In a bedroom on the third floor, he sets two alarms for 6 a.m.

DAY TWO 7:30 A.M. Reality check

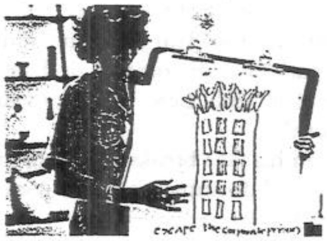
Hall has logged a good hour editing concepts by the time Mo Siegel, Lindsay Moore, and Keith Brenner arrive. Hall, of course, has a trademarked name for the business of day two. He calls it InterACT. Essentially, it's the point at which the real world intrudes upon the blue-sky optimism of the day before, the point when, in the light of competitive realities or production problems or maybe governmental regulations, some of yesterday's cute little newborns don't look quite so hale and hearty.

The living-room couches and chairs have been drawn tighter to help a group half as large as yesterday's to focus. Everyone receives an 11-page printout describing 33 concepts, 18 of which are individual kits in the Kaleidoscope line. Hall tells everyone to vote for 5 to 7 favorites, to help focus the discussion on the more promising ideas. While everyone reads, a Jimmy Buffet number plays on the jukebox.

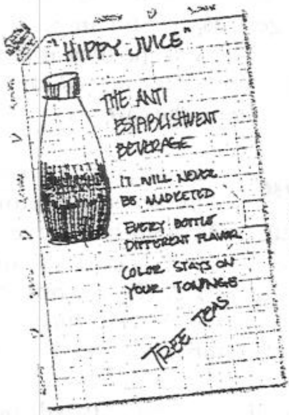
If the Eureka! Stimulus Response sessions resemble tennis players warming up, the InterACT sessions are like match play. Suddenly, there are lines. And umpires calling, "Out!"

"I don't see a USP [unique selling point]," says Brenner, critiquing concept number two, Celestial Seasonings Nature's Force Ginseng Softgels. "It's not like we're introducing the product

ART AND INNOVATION



A 'Flapdoodle' sheet combines pictures with the word associations they trigger.


"HIPPY JUICE"
THE ANTI ESTABLISHMENT BEVERAGE
IT WILL NEVER BE MARKETED
EVERY BOTTLE DIFFERENT FLAVOR
COLOR STAYS ON YOUR TONGUE
TREE TEAS

A sketch from the Celestial session. Artists roam the groups, making ideas visual.

Overnight, artists turn raw notions and sketches into more finished representations.

to the consumer; it's out there."

A 10-minute around-the-room discussion ensues. Siegel explains that Celestial's ginseng tablets do have USPs. "Ours is 25% stronger than Ginsana, and we include coenzyme Q10 [a substance with promising links to longevity]. We also need to explain that we don't have ground-up weeds in our herbs; we've extracted the active chemicals."

"Standardized," says Moore. "We're experts at blending herbs."

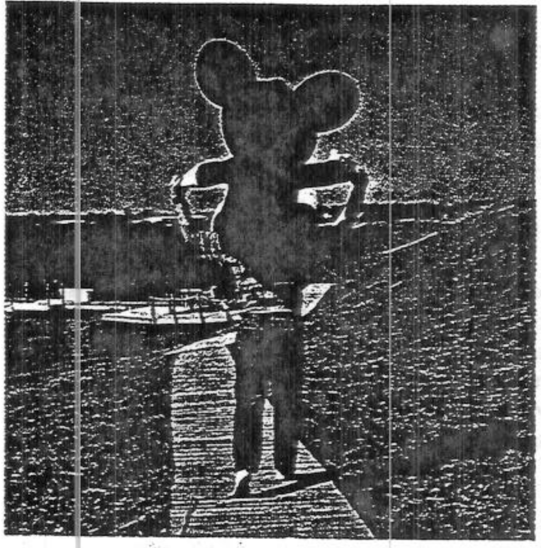
Hall grabs the reins. "What I'd like to do is turn this into a marketing tool, one that can transcend ginseng and get to a corporate equity and a trademark that tells about this process of being naturally grown, of being lab standardized. If we could put a name on that."

"That's very good," says Moore. "Nature grown, lab standardized."

Notes are taken and shuttled to the library, where Wecker works on revisions. The updated ginseng concept and a couple of others reemerge a bit later, accompanied by the wording "NGLS certified, guaranteeing that each dosage is Nature Grown and Lab Standardized to authenticate optimum potency delivery."

11 A.M.
Tactic: Visuals as new stimuli

All discussions cease when Steve Klein enters with the fresh-off-the-computers artwork—full-color mock-ups of boxes, cans, bottles, and bags—some of them clearly launched by the previous day's discussions, others flat-out surprises. He spreads them out, and everybody studies them, before *these* stimuli begin to drive the discussions. Among the designs are a couple of outright bull's-eyes, many intriguing mock-ups that accomplish their goals in part, and two obvious misses. Ironically, the misses prove especially helpful. The box design for the Kaleidoscope collection is so bad—condom boxes, everyone agrees—that the talk almost immediately turns to rescuing them. Soon born: the idea that each box should resemble its Celestial cousin but contain a window, a strategy that will distinguish the product from the existing teas while also revealing some of the nontea contents. And to Siegel's dismay, the artists have veered off the mark—his, anyway—of the distinctive package he liked so much the day before.



AT P&G, HALL WAS notorious: he was the guy in bare feet, the weirdo with the stuffed animals. Also the guy with ideas.

"Someone ought to run over to Kroger's and get...." he says, naming several products with similar packaging. Not three minutes later, after a quick trip to the upstairs archives of product-filled bins, Sean McCosh reappears with those very items, plus a similarly packaged, less well known brand that Siegel reaches for immediately. "This is it," he says, holding it lovingly aloft like the golden statue raised by Indiana Jones in the cave.

2:30 P.M.
A calm at the mansion

The airport taxi arrives. The session continues. At 2:40 good-byes are said. Hall and Siegel hug. The front door closes. Hall turns to his crew: "Good stuff, folks. Get some sleep tonight."

Many of the concepts will be reworked tomorrow. Revised and new-package designs will be overnighted the following week to Celestial's headquarters, in Boulder. There will be more revisions and back-and-forth phone calls. Along the way, some totally new ideas will come to life. A month later, 41 concepts will be consumer-tested by AccuPOLL, a market-research company Hall cofounded and has since sold his interest in.

The question isn't so much *whether* Celestial will go to market with any of the ideas but *how many* of them it will go with. And more important, which ones: the safe, small ideas, or perhaps one of the big, hairy ideas? And how?

Standing in the now-quiet living room, Hall, still pumped on adrenaline and Brain Brew, praises the people who work for him—those on staff and those on call. "We've been through wars together." His mind leaps to another metaphor to try to capture what it is he does. "It's a little like Daniel Boone deciding to go out on the trail, exploring. And you get to go with a whole bunch of really cool people. The key is, you can't do it in a vacuum. You can't expect to do it all at once."

In his inimitable—and marketably corny—way, Hall has reduced what goes on inside the Eureka! Mansion to a simple formula: $E=(S+BOS)^F$. "Eureka equals Stimulus to activate your mind—both related stimuli and unrelated stimuli—plus different Brain Operating Systems [smash-associating, mind dumping, bulging] to maximize the value of the stimuli. And last but not least, do it in an environment of playful fun to set off chain reactions, so one thought provokes new ideas and inspirations. I really believe that's the universal theory of creativity.

"You saw it—ideas changing and being sparked. I've come to understand parts of it," Hall says, "but a lot's still a mystery."

Then his face breaks into a big Eureka smile. "I do know, it's wicked-cool." ◘

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WHARTON REPROGRAPHICS

RUTH M. OWADES

In late October, 1978, Ruth Owades felt she must leave her job and fully commit to starting her own mail order company or else give up the idea. The company would be Gardener's Eden, which would offer unusual, practical, and hard-to-find tools by catalog to affluent home gardeners. She had developed the concept while working for Avion, a group of mail order companies. However, in a meeting September 2, the corporate management had turned down her proposal to start such a company within Avion. Ruth strongly believed in the potential of a gardening catalog and had been looking forward to running the new enterprise. Swallowing her disappointment, she asked for and received permission from Avion's chairman to use the idea and try to start the venture on her own if she could raise the money.

The days since had flown by as Ruth rushed to see if she could get a company underway in time to mail catalogs in January for the spring season. She felt that gardening would be a one season mail order segment and that further delay would mean waiting another year. Earlier, Ruth had developed a basic plan for starting this company using the resources of Avion's other divisions. Now, she had to adapt the idea to stand as an independent business, raise $250,000 in capital, and learn enough about the details of mail order operations to get started.

With Avion's agreement, Ruth had continued on their payroll to carry out certain specific projects. This gave her time to begin the process of raising funds. By the end of October, however, Ruth had to commit to merchandise orders, warehouse arrangements, office leases, and utility connections to make a January catalog possible. She couldn't even print catalogs without a company address and telephone number!. To make these commitments, Ruth would have to leave her job at Avion and completely dedicate herself to getting Gardener's Eden going. Yet she was not entirely happy with the only financing group she had interested so far and was even less sure that she wanted to commit to the great Unknown — she really had no experience running a business. Time was running out for Ruth to decide what she should do.

This case was prepared by Richard O. von Werssowetz, Senior Research Associate, and Robert W. Kent, Associate in Communication, in association with Professor Howard H. Stevenson as the basis of class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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BACKGROUND

Ruth M. Owades grew up in Los Angeles, where her father owned a small bookstore. She attended public schools and majored in French at Scripps College, graduating with a BA in 1966. After a year's study of French theater on a Fulbright grant in Strasbourg and Paris, she took a clerical job at the Economic Development Office for the City of Los Angeles, located in New York City. She married in 1969; her husband's job in the beer business took them abroad to Athens and, a year later, back to St. Louis. Analyzing her options, Ruth decided that she wanted a career in broadcasting. She took a few courses and started doing theater reviews on a local radio station. Then CBS Radio, St. Louis, hired her as Assistant Program Director.

When her husband took a new job in Boston in 1971, Ruth remained in St. Louis. But, as she put it, "my career came to a dead standstill; company culture would not allow for my not following my husband, and I moved to Boston." After a six months' job search, she found a position at WCVB-TV, Channel 5, as associate producer of a morning talk show. She continued:

> I spent a year there. The show had poor ratings, and I grew frustrated. The show was canceled. I decided then and there: I'm going to be my own master. That was January, 1973. I took out a map and drove over to the Harvard Business School.

As a student at HBS Ruth started the Communication, Leisure (now Arts) & Entertainment Club. "At the time," she said, "there was no interest in broadcasting at HBS, nor was the broadcasting industry much interested in the school." As president of the CLE Club, Ruth was a sort of impresario: she encouraged the big networks -- ABC, CBS, NBC -- to interview on campus; she got major figures in the film and recording industries to speak as guests of the club. As for her own career, she was looking for a job in broadcasting:

> But the broadcasting offers weren't quite what I wanted. With an MBA I was going to be stuck in a finance job. Or in sales. I didn't want to sell time. I wanted something creative. And I was reluctant to move to New York. Besides, I'd made a deal with my husband: if he'd see me through the Business School, I'd take a local job that would support us, if necessary, while he quit his corporate job and set himself up as an independent technical consultant for the beer industry.

Graduating in the spring of 1975, at the bottom of an economic recession, Ruth took a job at United Brands, Boston, as Marketing Project Manager in a division of diversified groups. "At United Brands, which was formerly the United Fruit Company," she said, "my division included everything but bananas and meats." Six months later, she saw in the newspaper that the Avion Group, of Andover, Massachusetts, had reported good earnings. She knew the Chairman and CEO of Avion, Arthur Vinson: she had interviewed with him while seeking a summer job between her first and second years in the MBA program, and she had kept up occasional contact. She now wrote Vinson a letter of congratulations on Avion's profits. Shortly thereafter, Vinson called Ruth and invited her to lunch.

The Avion Group consisted of seven mail order companies which had all been acquired after achieving good individual success. These companies had flourished within Avion which had had spectacular growth. However, they were beginning to feel the effects of increased costs and competition in the mail order business. Each subsidiary company operated very independently, with a minimum of corporately-mandated financial controls. Now Vinson was examining better ways to coordinate and control the use of the company's resources. He and Edward Dowd, Avion's president and chief operating officer, were also particularly concerned that the group might be losing contact with their customers as they grew. He offered Ruth a new position which would be the first non-financial corporate staff appointment: Director of Marketing.

AVION GROUP: MAIL ORDER COMPANIES

Ruth began work at Avion headquarters, a small office located north of Boston, with a variety of responsibilities. She wrote the annual report which covered the Group's seven mail order companies; she did market research and worked with the individual companies on special projects. She found she liked the mail order business:

> There was something about the whole mail order process that was fascinating to me. It was marketing -- which I liked. It was communicating with your customer -- which I liked. It was creative: nothing could be more creative than putting together a catalog and writing the copy. And it was all very measurable. You mailed 250,000 catalogs. You knew exactly where each name came from. And you knew what the results were: which mailing list pulled, which didn't; which broke even, which made money. You advertised in certain magazines, and every ad was coded: you knew if it worked. I had heard the old advertising story: 50% of it works and 50% of it doesn't; the trouble is, we don't know which 50% . . . In mail order, you *do* know which 50% is working.
>
> Mail order businesses particularly, and many small businesses in general, tend to be "mom-and-pop" -- or just mom, or just pop -- businesses. They start small, stay in the family, and some are very successful. Before costs got so high, you could place a mail order business almost anywhere in the country; you could take it with you to a retirement community. All of the mail order companies that Avion acquired had this profile. They had been started by a family or an individual, they were located in odd resort areas, and the ones now within Avion had done very well.
>
> But the owners didn't care about customer profiles. They were making money, they were living where they wanted, they employed their relatives. When Avion came along to buy their

companies, they got a fair amount of money or stock and usually stayed on for a time as president to run the operation. Avion would help them augment their management team, but Avion's strategy was not to meddle with a successful, on-going company. (Arthur Vinson felt this "hands off" attitude was one of Avion's greatest strengths in acquiring the most desirable companies.) Even after control might be transferred to a "professional manager," the prior owners were very concerned with maintaining the characters of their old companies. The same management techniques and procedures were very often left in place. If they hadn't needed market research before, why did they need it now?

When I took the job with Avion, it was Arthur's point of view that the time had come -- competition was increasing -- to learn more about who our customers were: why they were buying and why they were not buying. And so I began to work with the individual companies on developing customer profiles -- demographic and psychographic analyses. One of the things we discovered was that many people who buy by mail have a lot of hobbies, and one hobby that kept coming up in our analysis was gardening.

Another concern of mine at Avion was to see what I could do to make use of the assets of all these individual companies. Each company maintained its own mailing list, each maintained its own warehouse, each negotiated with a printer for the production of catalogs -- all very expensive items. There were so many ways to gain efficiencies. To compare mailing lists, for example: Wouldn't it be useful to know who the really serious mail order customers were -- people who might be buying from (say) three of Avion's seven companies? What about a coordinated effort in the mailing of all catalogs? And warehousing: What kind of savings could be had in a centralized warehouse and shipping operation, with a single computer to do it all? These were the sorts of questions I was exploring at headquarters. And my market research seemed to suggest an idea, to identify an opportunity for making something more out of our assets: to do a gardening catalog.

THE GARDENING CATALOG

In April 1978, some two years and four months after she had begun working at Avion, Ruth scheduled a meeting with Arthur Vinson and Ed Dowd. It was a relatively informal meeting, in Vinson's office, but Ruth as usual came prepared. Her "pitch" was simple: Given a strong interest in gardening in the customer profiles of Avion companies, and Since the assets were available: the mailing lists and off-season warehouse facilities, Therefore it seemed obvious that Avion should try a gardening catalog. In particular, a catalog of "unusual, aesthetic accessories for the affluent gardener -- not the necessities (they have those) -- but exotica that would appeal to the well-to-do suburban housewife 'who has everything' and enjoys showing off her garden."

In her presentation, Ruth demonstrated some product samples, suggested some catalog names, pointed out the benefits to Avion of using existing resources to create something new, and addressed the question: Why Would We Succeed?

- We know our customers are interested in the products.
- We know our customers are mail order buyers.
- We know our customers have the money.
- We have the opportunity for a unique promotional effort, by using each Avion company to introduce the catalog to the customers on its mailing list.

Her research had shown "virtually non-existent" competition, while considerable interest did exist in magazines on gardening. She then addressed the question, Why Would Avion Company Presidents Cooperate?

- Because a successful Avion Group overall is best for each individual company. They see that more and more.
- Because we could set up a system where each company would get credited for some percent of profits or sales relative to the number of the company's mailing list of names used.
- Because eventually this operation would be a source of new names for all companies, too.

Ruth described the catalog, the sourcing of inventory, the use of an agency to produce the catalog, together with costs for photography, printing, and mailing at various levels. Then she described how resources available within Avion could be used for mailing lists, fulfillment, warehousing, and order processing. She emphasized the capacity of one Avion company to handle the effort during its slow season (January and following) and the fact that there should be no inventory obsolescence with such a non-fashion product line. Finally, she provided "likely" and "worst" case projections, with mailing schedules and time tables (see Second Presentation, below, and exhibits). And, of course, she proposed that she be the one to look into the idea, to see what the possibilities were.

Vinson and Dowd "loved it," she said:

> They loved the name ("Avant Gardener"), the idea, the samples. They saw advantages of the plan on Wall Street — for many years the whole point of Avion was to go public, and here was an opportunity to say, "Look! We've always been seven separate companies and see how we've created even more value out of existing resources." And they saw the sheer fun of it: life at headquarters was boring; there was nothing to touch, only reports.

> I saw a chance to get into line management, to get my hands dirty and to do something. They told me to go ahead and work on the idea, so I went back to my office and said to myself, "Great, but now what do I do? I don't know beans about starting a catalog!"

Without extra staff and without spending an inordinate amount of money (she had Vinson and Dowd's enthusiastic support of the idea, but no specific budget), Ruth worked for several months on a gardening catalog, in addition to her other duties. She registered catalog names, put together possible layouts, subscribed to industry magazines (Nursery Business, Landscape News, Hardware Merchandising, and the like), and researched merchandise sources in the catalog collection of the Massachusetts Horticultural Society and in visits to New England nurseries:

> It was a small office environment. I tend to get very enthusiastic about things, and when a new sample product for the catalog would come in, everyone would know about it.
>
> I think Arthur and Ed were perfectly pleased by the way things were going. And yet, when it really came to the point that I was actually going to do it, there was the feeling that since Avion had never started a company from scratch, it probably couldn't be done. So they kind of watched to see what I was doing. And, after a few months, when it looked, by God, like "she" was going to do it, everybody watched more carefully what was happening here. Is this what they wanted? They'd never started a company before; they'd always bought existing companies. What was the risk? The economy was soft . . . In other words, this was serious.
>
> Because it had a slow spring season, we were planning for Avion's Curtains/Curtains company to provide most of the operational support. James Blevins was the C/C president. In the middle of the summer I started to approach Arthur: "Don't you think it's time that we or you go to Worcester to set this up with James? There's a lot to be done." And Arthur would say, "Yes, I'll handle it. Let me handle it."
>
> As the weeks passed, Arthur didn't seem to be making much progress setting me up with C/C. When I'd ask, he'd say, "I'm working on it, thinking about it." He kept coming to me with a lot of negatives: "What about the fact that 90% of new companies fail? What about the difficulties of starting a new business, of getting mailing lists to work?" I heard through the grapevine that one of the other company presidents had told Arthur, "She cannot do it. It cannot be done."
>
> I continued planning the first catalog. It would be small — sixty or so items on sixteen pages. I talked to a computer guy who was involved in maintaining existing company mailing lists. We were not going to spend any money on outside lists.

> We would take 50,000 names from each of several of the companies and print the catalog in different versions, each linked to the company from which we were getting the list. My plan was to have each company president introduce the catalog to his customers in a letter -- like introducing a friend.

During the last months of the summer, Ruth sensed that at least some of the company presidents were quietly disparaging her plan. It appeared to her that the objections involved both her lack of operating skills and the encroachment into their operations that such a new venture implied.

> In mid-August, things started to change. Arthur started asking, "Well, if we're really going to do it, maybe it should just be a division of Jane Gannon?" This was the shoe catalog subsidiary run by Arthur's cousin -- the very president who had been most vocal in bringing up problems. On the one hand, his cousin didn't think it was a good idea. But if we were going to do it, it might as well be one of his companies. To that, I said NO.

Arthur asked Ruth to present her plan on September 2 to Avion's top management and a number of the key company presidents.

SECOND AND FINAL PRESENTATION TO AVION

> I felt the deck was stacked and that the chances of my coming out of that meeting with a catalog were very very slim. Something had happened in the preceding two weeks, in the tone of discussions. I just knew that my back was up against the wall. When I left the house that morning, I said to my husband, I feel I'm making a "Give me liberty or give me death!" speech.

Ruth knew all of the executives who attended her presentation. She had worked with them and their companies as corporate Director of Marketing developing customer profiles and helping with promotional literature. Those very profiles had identified their customers' high interest in gardening. But the idea of a gardening catalog -- and a new and separate company that would use these companies' resources -- would be a new direction for Avion. Ruth had her work cut out for her.

She began by pointing out the popularity of gardening in the United States and by showing various gardening magazines and recent big coverage of the subject in such weeklies as People: gardening had become a hobby in Hollywood's backyard and on Park Avenue's rooftops. She reviewed her market research: 62% of Avion's mail order customers showed an interest in gardening. And then she put the question:

> How do we derive the best advantage of this information for the Avion Group?

And the answer:

> By cross-utilizing this information -- and the resources that we now have -- to create something new: a gardening catalog; something that would be most beneficial to the Avion Group as a whole.

She introduced the name "Avant Gardener" and presented logos and catalog page-spreads designed by an advertising agency. She showed some sample products and identified the target audiences: the suburban indoor and outdoor gardener, and the urban indoor, patio, and rooftop gardener: primarily the 35-60 age group (and female). She discussed the lack of competition for this very special sort of tools and accessories catalog:

> There are many seed and nursery catalogs, but nothing quite like what we're looking at -- a catalog with attractive, useful, unusual products that gardeners could use immediately, inside and outside their homes. There is a real market niche that hasn't been filled and we can fill it.

Then she reviewed the reasons for probable success that she had given in her first presentation to Vinson and Dowd five months earlier. Since that time, she had worked hard on product sourcing and plans for catalog production, and now she presented her findings that:

> 1. Although there is no established "gardening accessories" trade show or showroom, I believe that we have successfully sourced the catalog, with many exclusive items, unique items, and useful items.
>
> 2. Catalog production is being worked out with Doane Associates, a Boston company, which has done very fine work for two of our companies. They have strong experience in direct mail (12 years) and we have confidence in their abilities. (They are optimistic about the results of this mailing.)

It was now time to discuss fulfillment and warehousing. From her staff position it was clear to Ruth that some of Avion's companies were carrying costly and nonproductive overhead in the mid-winter and early spring months. Their warehouses were, simply, idle in this period; and rising costs were a problem. She looked particularly at Curtains/Curtains, one of the companies with heavy fall and pre-Christmas business: it didn't stock its inventory until mid-summer; much of its inventory was new annually, and subject to changing fashion and fresh appeal in the fall catalog; its February sales were a small fraction of November activity.

> This is why we are looking to Curtains/Curtains for participation and discussion this afternoon. Because the gardening catalog would be dropped (i.e., mailed) in early January, we felt that the counter-seasonality to the C/C business cycle would be a plus both to the gardening catalog and to C/C's bottom line.

Before the meeting, Ruth had made calculations for a number of situations (see Exhibit 1). She now presented a selected series of projections (see Exhibit 2) using a range of assumptions. These projections were based on the following facts and ranges:

- The average price per item in the catalog (From item selections)	$20.
- Number of items ordered from C/C catalog per order (Historical)	1.5 average/order.
- Sizes of mailings (Thousands of catalogs)	200, 300, 400.
- Response levels (Including pessimistic 2%)	2, 3, 4%.
- Average order sizes	$30, 35, 40.
- Gross margin (Calculated by Ruth)	55%.
- Catalog expense for 16 pages + postage (Estimated by Doane Associates)	according to mailing size.
- Fulfillment costs (Maximum for any of Avion's companies)	20% of sales.
- Inventory write-down (Ruth felt unlikely because of nature of merchandise: little obsolescence)	10% of sales at 40% markdown.

Ruth found the going rough:

> Everybody had their guns out. They had pages of questions. "What if this happened and what if that happened? What if the economy weakens? What if your average order is low? What if the spring weather is bad?" And of course I did not have solid answers for any of these hypothetical issues. I had no guarantee of what the results would be.
>
> It was a very tough meeting. No conclusion was reached. I left the room. People divided up. A couple of people went into Arthur's office — it was like a political caucus. I came back into the meeting and everybody was sort of saying, "Well . . ." That was it: there were a bunch of "Wells . . ." And nobody

> said anything. Then Arthur said, "Let's break up this meeting now." It was extraordinarily uncomfortable.
>
> Nothing was said, and I finally went into Arthur"s office: "May I talk to you?" "Yes." I closed the door and said, "I don't understand what's happening. Do we have a catalog or do we not?" People don't like being put on the spot like that. But I didn't care. It was extremely important to me. He was sitting at his desk and would not look at me. I said, "Arthur, you don't have to say anything: I know." "Well, you know, I mean, it's just . . .the risk; the economy's looking bad; this is not a good time on Wall Street." I asked if there was any recourse; should I argue? He said no and that was it.
>
> Arthur was very smart. He sensed the overall displeasure of the division presidents with the catalog. Even if he let me proceed with one division, he felt he still would not have diffused the overall unhappiness. More important to him was to have a happy team. This plan had started at corporate; you couldn't hide the fact that it was a corporate-engendered idea.
>
> I remember that day well — Thursday, September 2, my birthday.

Friday, Ruth reported to work as usual and kept an appointment she had with Doane Associates, the advertising agency, to talk about the catalog. She told them what happened. Ruth had worked very closely with them while developing her concept and plan and they had been very supportive. They were of course disappointed, but remained very enthusiastic about the idea and suggested that Ruth call them next week to talk things over.

The Labor Day weekend that followed was a trying time for Ruth. She and her husband had planned a get-away to Montreal prior to his entering the hospital on Wednesday for life-threatening surgery. She was upset and angry about the cancellation of her project, but didn't want to upset her husband before surgery by discussing the results of the meeting with him, nor bring up the growing idea of possibly starting the gardening catalog on her own. Yet this was September. In order to catch not just the season but the year — a one-season year for gardening accessories — she would have to have a catalog in the mail in January. To do that, she would have to begin right away. That meant she would have to talk to Arthur first thing next week. Ruth described her thoughts that weekend:

> I thought about it at length and I knew that I wanted to try to do the catalog now. That was the first time I ever felt that I wanted to have my own company. I would have been perfectly content running it for Avion or someone else. But I wanted to do this — this particular idea. I had put so much effort into it, and I thought it had such a good niche in the market. Somebody should grab it! I had been rebuffed. I was angry and hurt, and my confidence was shaken. But I believed in the idea. I

thought, "Just because a $50 million company says no, it doesn't have to be no. I'll prove to them that I can do it."

One way or the other, I really made the decision to leave Avion that weekend. I don't think that there ever was a question in my mind of whether I should simply stay at Avion and do what I had been doing ten months before. That was one advantage of not having people dependent on you for a salary. I didn't feel guilty about not being able to feed three children. Or myself, for that matter. I also knew that I was a marketable commodity: I could get another job. But I knew that, longterm, it wasn't simply that the project was canceled. Rather, I was being told: "Ruth, you cannot do any more original work. We want people who will do the routine stuff and won't get in anyone's way."

The project was canceled and that fired me up. I had lost creative opportunity at Avion.

On Tuesday, September 7, 1978, Ruth went to see Arthur Vinson and said, "You know I'm disappointed. And I know you're not happy about the decision. If I can raise the money, do you mind if I take the idea and do it on my own?" Arthur said, "Sure. Go ahead and try it." There was no thought at that time of Ruth's not performing her regular duties at Avion, including the annual report due out in October. But she and Arthur agreed that she would be on her own schedule, in the office or at home.

CAN SHE DO IT ON HER OWN?

One of the first things Ruth did after Arthur gave her the okay was to get in touch with Doane Associates to let them know that she was going to try to do the gardening catalog herself. They thought that it was a great idea and agreed to work with her. They even said they knew some people who might be interested in backing such a company, and said they would check and let her know. Ruth also called various vendors who had sent her product samples at Avion: she told them that Avion would not be doing the catalog, but that she might be calling them soon about new developments. Her husband's surgery had been successful, although his recuperation would require that he not speak above a whisper for a month or more. He was very supportive of the idea:

> He was a wonderful advisor. We worked together. I was fortunate to have him to think with me. But there was so much to do. The timing was incredible. I had to rethink and adapt my plan: I could no longer use Avion's resources. I had to find the money and put together the whole operation simultaneously. And the clock was ticking.

Ruth began thinking about the areas of her plan that would be different as a separate operation:

- The catalog. This could be prepared and mailed entirely by a professional mailer. The unit cost would be $0.25 if one group handled the whole job -- design, photography, typesetting, printing and binding, sorting, mailing and prepaid postage. This could be done by Doane Associates, but other firms were available.

- Mailing lists. She would no longer have the use of Avion's mailing lists, but in doing market research she had learned a good deal about mail order customers and the mailing list industry. She could rent lists of recent mail order customers through brokers and would have to mix and merge these lists. Because of duplicates, she would have to rent 10% more names than catalogs she would send. The names alone cost $0.07 each, but she did not know the cost of computer time for merging and processing the list tapes. It was necessary to eliminate the duplicate names and to code and print all mailing labels in order by zip code and sector (required by the Postal Service for bulk mailing). She did have some contacts in computer firms she had developed at Avion.

- Fulfillment and Overhead. These costs were the big question mark. At Avion she could count on the C/C warehouse and the office at headquarters. The operational expenses were known, and more importantly, shared. Ruth did know that the cost to fill an order ranged from $2 to $5 for the Avion divisions. Now she had to find her own warehouse and shipping facilities and supplies, an office and its furnishings, and provide for all sorts of other overhead costs: telephone, credit and charge card margins, communications and customer services, staff.

Ruth decided that she should plan on a 400,000 catalog mailing. To do this, she estimated that she would need $250,000. But clearly, in addition to beginning to look for financing, she would have to get to work on the computer processing, fulfillment, and overhead questions. Investors might be willing to accept more speculative sales projections, but they would certainly want to know that the operational estimates were sound.

Ruth reported her initiatives as follows:

> I started to investigate the various choices. I talked to a few friends from business school. "How could Avion have done that?" they asked. "It's yours now. You've got to go out and do it yourself. This is your opportunity. Go out and sell it to another company: let someone else hire you to do the idea." I tried that. I spoke to a fair-sized mail order company that I knew through my husband's business. They were located in

Vermont. Their business was counter-seasonal to mine, and I thought we might have a fit. They were interested, but I think that they were frightened because Avion had not gone ahead with it. They never said no. But they never said yes. And time kept passing. I contacted several other big mail order houses where there were people I knew through industry contacts at Avion. But it was difficult.

Of course, I was always worried that "they might take the idea" and do it without me. Avion itself could start up six months later. My husband does a lot of inventing and we always used to worry when he'd take an idea to a company. But if you sit back and worry about it all the time, you're going to keep the idea but never see it come to fruition. You've got to take the risk.

I knew that you're supposed to have an elaborate plan and strategy. I didn't. I essentially took what I had used at that last meeting at Avion and made it a little nicer, adding a narrative. I talked to a couple of banks. They were utterly discouraging. I was looking for money and leads, but all I had was an idea. I was asking about anything and everything: I really wanted to get a feel for what was possible. I was asking for advice and was ready to talk with anyone who I thought would be helpful.

I had resolved that I would not approach anyone who had a financial connection with Avion -- any of the venture capital people, any of their bankers. But I did keep in touch with Doane Associates and they introduced me to some people with private money to invest, in mid-September. They were three people acting as a group: a dentist, a lawyer, the owner of a small business. They knew a little about mail order and knew that the Doane agency was very enthusiastic about what I had. I gave my "pitch" and provided some financial projections. They said they'd get back to me.

Meanwhile, I started to talk with some venture capital people in Boston. Greylock was the only big one: I knew somebody who knew somebody there. I also found a smaller venture capital group that was part of a stock brokerage firm that my husband and I used. These people were very nice, but in Boston high tech was the big thing. They weren't negative, but they were not encouraging. I didn't really have anything to show. What was there to invest in? Everybody's reaction was the same, voiced slightly differently: We can't invest in an idea, unless it's a patented high tech idea. It was too early. I only had an idea, some drawings, some numbers. The risk was too high, they thought.

So I tried New York, a friend of ours. Two people working out of a small office in Manhattan, managing other people's money. They just had too many projects.

To make matters worse, I was not only saying to all these people that I wanted $250,000, but I was also saying that I wanted it next week, please. I had my momentum to guard, but the economy was beginning to look weak and a number of people told me to wait until things got better.

I never asked any friends to invest, although a number did come to me with, "I have $30,000 to invest" or "I have $50,000." I thought about it and was very touched, but decided no. The possibility was that I would lose the money for them — and the friendship was too important. But I did start talking to individuals who were interested in mail order, some from the industry contacts that I had made and some from a corporation where I had tried to place the idea. I had asked, "Well, do you know anyone on a personal basis who might be interested in investing in this idea? I think it's terrific." Although there were many days when I no longer thought it was so terrific — I was becoming discouraged, and I was becoming frightened, too. Could I really do it? I put up a bold front.

When my husband and I went to a dinner party, I would talk about what happened. I had been rebuffed by people in the industry. It was an interesting story. Someone would say, "Well, wait a minute. I know a guy who just liquidated his mother's stock portfolio. Why don't you talk to him?" I talked to my accountant, personal lawyer, dentist, doctor, everybody I knew in a professional capacity. I asked for leads — and came up with a couple. They almost invested. I thought of running an ad in the Wall Street Journal, but wasn't gutsy enough. Every way I wrote the ad, I couldn't imagine that I would respond to it. All of the negatives that people had posed to me came up in my mind.

I didn't find that many serious leads. I ended up talking to several individuals and groups who were interested in mail order. Mail order has a kind of cachet, a special excitement. Part of this interest is unfortunate; people think it's an easy business. Send out a catalog, and orders just pour in. You can mail it anywhere, from your corner mail box, and people everywhere will buy from you. There's a personal "thing" about mail order that people like, which allowed me to get as many people interested in it as I did.

While she pursued financing, Ruth had to face the question of a warehouse and office. She started by looking for space that was both warehouse and, potentially, office. The search was discouraging: space that she thought she could afford was dark, unheated, rat-infested, and without shelving. She also remembered that some of her merchandise would be heavy and shipped in on pallets: what would she do about forklift trucks -- and the people to run them? She thought, "There must be a better way," and decided to pursue an office ~~location~~ location separate from a warehouse.

> I knew I couldn't subject myself to working in a dungeon. I'd get so depressed I wouldn't be able to work. One of the things I never liked about working at Avion was driving up to Andover every day. There are a few concessions you sort of allow yourself, and mine was to be in the city. I dislike the suburbs. So I started to look for office space in the city and found rents at all levels. I decided to try to get in one building in Copley Square, where I wanted to be. I managed to negotiate the rent down to practically nothing, but would have to sign a lease soon. Then I went to look for some sort of warehousing.
>
> I called every single public warehouse in the greater Boston area to see whether they would simply let us use part of their space. They all thought I was crazy. It had never been done before. Finally, I was speaking to a friend who had graduated from HBS. She was doing warehousing for a company and said, "The warehouse that I use is hungry. They just lost a large account. And, by the way, they're smart. Why not give them a call?" I called the owner and explained what I wanted to do, something like this:
>
> - I was a little mail order company, but there were a lot of mail order companies in New England. It made perfect sense for him to offer me a warehousing and shipping service and, once he did, the others were potential customers.
> - He would receive merchandise from my vendors and store it.
> - Daily, I would provide him with shipping orders for individual customers, together with typed shipping labels.
> - Promptly he would make up the packages, using wrapping materials I would supply and which he would have stored with my merchandise.
> - He would ship the packages out daily, via United Parcel Service (under contract to me), recording each package in the UPS log: order number, name and address, zip code, shipping zone, weight.
> - I would pay him for each shipped package, at a flat rate.

> The fellow was intelligent. He knew exactly what I wanted, and the timing was such that he responded positively. It would be a clean business for him, and he loved getting involved in a whole new thing. I wouldn't have to worry about storage costs, rent, staff, or utilities when my business was down; when my business was up, he would put on another person. I remembered that it cost the Avion divisions from $2 to $5 to fill an order, depending on the company. Before I sat down with him, face to face, I figured on starting at the $2 level and going from there. Actually, I started well under $2. You can sit across the table from someone and say, "I can't do it any other way. I can pay you $1.65 an order and no more. That's it." That really goes a long way, if they care; if they want the business and they care about helping you get started. I got a lot of mileage out of reminding people what it's like to get started, of making them want to help a struggling little company make it.

A week after her first meeting with the group of professional men that Doane Associates had introduced to her, Ruth got a phone call: "We would like you to meet with our accountant." It was late September, and by then Ruth had been in constant touch with her lawyer, trying to price the deal, to work out the percentages. Originally, she wanted to give up no equity -- just to have loans. But people weren't excited: they wanted a "piece of the action." She hadn't yet talked price with the professional group, but with other parties she had found the range of equity expected to be 30-60%. She felt that since it was her idea and since she would be doing all the work, she had to hang on to at least 51% of the business plus a salary.

The accountant liked Ruth and said openly to the group, "She's a good investment." It wasn't a casual comment, and it confirmed for her what she had heard in talking with venture capital people: that they would really be betting on her, since all she had was an idea. And this sense of her being "okay," a sort of "member of the group," led naturally to the notion that since there were four of "us," each would take 25% of the equity. Ruth let the discussion flow, without for the moment resisting the notion of 25% equity for her, for she wanted to see how they viewed the salary question. She decided to play a big card: "I want the salary I was making when I left Avion." "What?" said the accountant. "I never met a broad in my life worth that much money!" She listened quietly; she didn't react with anger — he had tried to make a clumsy joke. But she made it clear: she was willing to negotiate on what the salary would be, but 51% of the company would be hers. It was her idea and that was not negotiable. But she would put up 25% of the $200,000 they were actually discussing.

> As their demands became clear, I formulated my response to their demands. My husband and I had agreed that we would put up 25%. Neither I nor my husband thought that we could do it all by ourselves. We didn't know what the company would end up generating. The risk was too great. And there were two big questions: my self-confidence and my knowledge. There was the nagging question: Was Avion right? Did they just know something

more than I did? We would never put in more than we could safely lose.

Over several meetings in a very short period of time, Ruth and the investors outlined basic terms of a possible agreement:

- Ruth would retain 51% of the equity, the group 49%.
- Ruth would accept considerably less salary than she had been making at Avion, and nothing initially.
- The investors would put up $150,000, Ruth $50,000.
- Ruth would hire Doane Associates to do the catalog.
- The investors would commit to a second round financing of $20,000 each under the following conditions:
    - Unanimous judgment that the company needed it;
    - That it would be put to proper use;
    - That it would allow the continuance of operations.

The meetings had come down to, "Well, now what?" I was raring to go; they were raring to wait. They had all the time in the world; I had no time. It was very frustrating.

SHOULD SHE DO IT?

Ruth now thought of her catalog as "Gardener's Eden." No matter what she called it, it was certainly no bed of roses. In the last weeks of October, Ruth felt she could put off some major decisions no longer. She reviewed what she had learned and what her situation now was.

She knew from her experience at Avion that superb service was fundamental to success: fast response to orders, having the merchandise in the warehouse, and having an excellent customer service department to handle problems and complaints. She had learned much about what it would take to create an operation that could establish her business and translate these precepts into action. She had to deal with an overwhelming number of questions:

- United Parcel Service: At first, when Ruth was considering the rental or purchase of a warehouse, UPS wanted to sell her some $4,000 worth of scales and other shipping equipment. Now that she had solved the warehouse problem, UPS still was asking for a $2,000 deposit for their service.
- New England Telephone and Boston Edison: Both wanted deposits of $500 for business service.

- Credit and Charge Card Service: Master Charge and Visa merchant service was offered through local banks and each was asking for 4% off the top; American Express was a single nationwide service and was asking for a 5.25% fee. Ruth asked around and found that the MC and Visa rates were variable, ranging from 3% up, dependent on sales volume and the bank. AMEX was less negotiable.

- Bad Checks/Bad Credit Cards: Ruth had heard about this problem at Avion. She asked some industry contacts for their experience and found that a 2-3% loss was common.

- Phone Orders: Not knowing how many orders would come over the phone, she asked around: 5-10% without toll free service. She knew she couldn't afford an 800 number, but also found that free inward calling meant more complaints and information-seekers.

- Mail: If she leased the office in Copley Square, she would be facing a 1:00 pm mail delivery -- impossible for a mail order business. The Post Office asked a big fee for allowing patrons to make their own early pickup. A box would be out of the question: there would be too much mail.

- Office Furniture: She would have to find all the furniture and equipment she had taken for granted at Avion on her own.

- Vendors and Inventory: There were many growing mail order companies in 1978. Some of her potential suppliers were beginning to back away now that Ruth was no longer at Avion. She would have to aggressively go after shipping commitments and negotiate terms.

  A company like Avion often ordered one-third of the expected volume of an item initially, and reordered after two or three weeks of response to the catalog. Some vendors preferred orders for the entire expected quantity of an item, with partial deliveries staggered throughout a season. If the item didn't sell as well as expected, the later deliveries could be canceled without penalty. Some would deliver to an established company before a season (for example, December) and would allow payment well into the season (for example, April). Others wanted payment in 30 days. However, Avion's banker had warned Ruth that vendors would demand cash up front from a new company.

  There did appear to be special attractions for a gardening catalog. While at Avion, Ruth had discovered that some gardening suppliers would welcome early shipments of their merchandise for a mail order catalog since normal retail shipments came four months later.

- Dun & Bradstreet: D&B wanted to interview her for a credit rating: they had had inquiries.

- Supplies: Ruth had to find and select cartons, packing material, tape, labels, etc.

- The Catalog: Putting together the catalog would be a big task. Time was short. She could use Doane Associates, but could probably save a good deal of money by contracting the production of the catalog by herself -- the photographer, designer, order form designer, and printer.

- Mailing Lists: Ruth would have to contract soon for the use of mailing lists and for the computer time to merge them and to produce the labels. In the one-time use of a group of mailing lists, one must mail at a certain time so as not to conflict with other mailing contracts. That day had to be in early January. [Companies selling lists usually seed them with dummy names and addresses going to their own locations to help identify unauthorized use.]

  Established companies received the names about 60 days before a mailing date and were expected to pay for use of the lists 30 days after mailing. However, Ruth had been told to expect a demand for cash up front here, too.

- Staff: How long could she continue alone?

Ruth was also still uncertain about how much money she really needed. At Avion, she could count on known historical response levels, using known customer mailing lists. Gardener's Eden would be an unknown company using a variety of rented mailing lists, mixed and merged for the first time. List brokers and Doane Associates felt a 1.4% response level might be more realistic. Ruth felt that she would therefore need a mailing of 400,000 to give her a secure customer base for future mailings. She calculated she could get by with such a 400,000 catalog mailing, a 1.4% response rate, and a $30 average order. These assumptions were less optimistic than those she had used in estimating a need for $250,000. However, it would not be unusual for a new mail order operation to run at a loss for the first few mailings. On the other hand, she no longer had to include direct warehouse expenses.

So far, her financing choice was limited: the three professional men said they would do the deal under the terms they had negotiated. Besides the fact that this would only result in $200,000 for the business, these three investors were not really professionals at dealing with fledgling companies. Ruth was not sure how well they would work together with her or among themselves.

Should Ruth leave her job, sink $50,000 into the venture, and do it? Should she stop and wait until she found a more perfect match? Some of her relatives were saying, "Wait a year. Go to other mail-order companies. The ones you've talked to are stodgy New Englanders. Why not take the show on the road?" Her husband was steady and supportive. But in addition to enthusiasm for an idea, did she have enough knowledge and skill to make it happen?

Exhibit 1
RUTH M. OWADES
Rough Profit Calculations for the Gardening Catalog - 8/17/78

Mail 350,000 @ 2% response = 7,000 orders

x $30 average order =		$210,000	sales
		105,000	50% GM
	-	95,000	catalog expense
$2 order	-	15,000	fulfillment
%	-	15,000	other
		$(20,000)	contribution
10% inv. w/d[a]		(8,400)	
Adj. contribution		$(28,400)	

x $35 average order =		$245,000	sales
		122,500	50% GM
	-	95,000	catalog expense
	-	15,000	fulfillment
		15,000	other
		$ (2,500)	contribution
10% inv. w/d		(9,800)	
Adj. contribution		$(12,300)	

Mail 350,000 @ 2.5% response = 8,750 orders

x $35 average order =		$306,250	sales
		153,125	50% GM
	-	95,000	catalog expense
	-	17,500	fulfillment
	-	15,000	other
		$ 25,625	contribution
10% inv. w/d		(12,200)	
Adj. contribution		$ 13,425	

Mail 350,000 @ 3% response = 10,500 orders

x $30 average order =		$315,000	sales
		157,500	50% GM
	-	95,000	catalog expense
	-	21,000	fulfillment
	-	15,000	other
		$ 26,000	contribution
10% inv. w/d		(12,600)	
Adj. contribution		$ 13,400	

x $40 average order =		$420,000	sales
		210,000	50% GM
	-	95,000	catalog expense
	-	21,000	fulfillment
	-	15,000	other
		$ 79,000	contribution
10% inv. w/d		(16,800)	
Adj. contribution		$ 62,200	

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[a] "Inv. w/d" = inventory write down.

Exhibit 1 (continued)

Mail 400,000 @ 2% response = 8,000 orders

x $30 average order =	$240,000	sales
	120,000	50% GM
-	100,000	catalog expense
$2 order -	16,000	fulfillment
% -	15,000	other
	$(11,000)	contribution
10% inv. w/d	(9,600)	
Adj. contribution	$(20,600)	

x $35 average order =	$280,000	sales
	140,000	50% GM
-	100,000	catalog expense
-	16,000	fulfillment
	15,000	other
	$ 9,000	contribution
10% inv. w/d	(11,200)	
Adj. contribution	$ (2,200)	

Mail 400,000 @ 2.5% response = 10,000 orders

x $35 average order =	$350,000	sales
	175,000	50% GM
-	100,000	catalog expense
-	20,000	fulfillment
-	15,000	other
	$ 40,000	contribution
10% inv. w/d	(14,000)	
Adj. contribution	$ 26,000	

Mail 400,000 @ 3% response = 12,000 orders

x $30 average order =	$360,000	sales
	180,000	50% GM
-	100,000	catalog expense
-	24,000	fulfillment
-	15,000	other
	$ 41,000	contribution
10% inv. w/d	(14,400)	
Adj. contribution	$ 26,600	

x $40 average order =	$480,000	sales
	240,000	50% GM
-	100,000	catalog expense
-	24,000	fulfillment
-	15,000	other
	$101,000	contribution
10% inv. w/d	(19,200)	
Adj. contribution	$ 81,800	

Exhibit 2

RUTH M. OWADES

Projections Presented September 2, 1978

Response:	200,000 Mailing			400,000 Mailing			600,000 Mailing		
	2%			2%			2%		
Average Order	$30	$35	$40	$30	$35	$40	$30	$35	$40
Contribution (000)	(31)	(24)	(16)	(12)	1	15	1	22	44

Response	3%			3%			3%		
Average Order	$30	$35	$40	$30	$35	$40	$30	$35	$40
Contribution (000)	(9)	2	13	30	51	73	66	98	130

Response	4%			4%			4%		
Average Order	$30	$35	$40	$30	$35	$40	$30	$35	$40
Contribution (000)	13	27	41	73	102	131	130	174	216

Exhibit 2 (continued)

200,000 Mailing

Response:	2%			3%			4%		
Average Order	$30	$35	$40	$30	$35	$40	$30	$35	$40
Sales (000)	120	140	160	180	210	240	240	280	320
Gross Margin @ 55%	66	77	88	99	116	132	132	154	176
Catalog Expense including Postage	74	74	74	74	74	74	74	74	74
Fulfillment and Overhead @ 15% of Sales	18	21	24	27	32	36	36	42	48
Write-Down 10% of Sales @ 40% Markdown	5	5	6	7	8	9	9	11	13
Contribution (000)	(31)	(24)	(16)	(9)	2	13	13	27	41

400,000 Mailing

Response	2%			3%			4%		
Average Order	$30	$35	$40	$30	$35	$40	$30	$35	$40
Sales (000)	240	280	320	360	420	480	480	560	640
Gross Margin @ 55%	132	154	176	198	231	264	264	308	352
Catalog Expense including Postage	100	100	100	100	100	100	100	100	100
Fulfillment and Overhead @ 15% of Sales	36	42	48	54	63	72	72	84	96
Write-Down 10% of Sales @ 40% Markdown	10	11	13	14	17	19	19	22	25
Contribution (000)	(12)	1	15	30	51	73	73	102	131

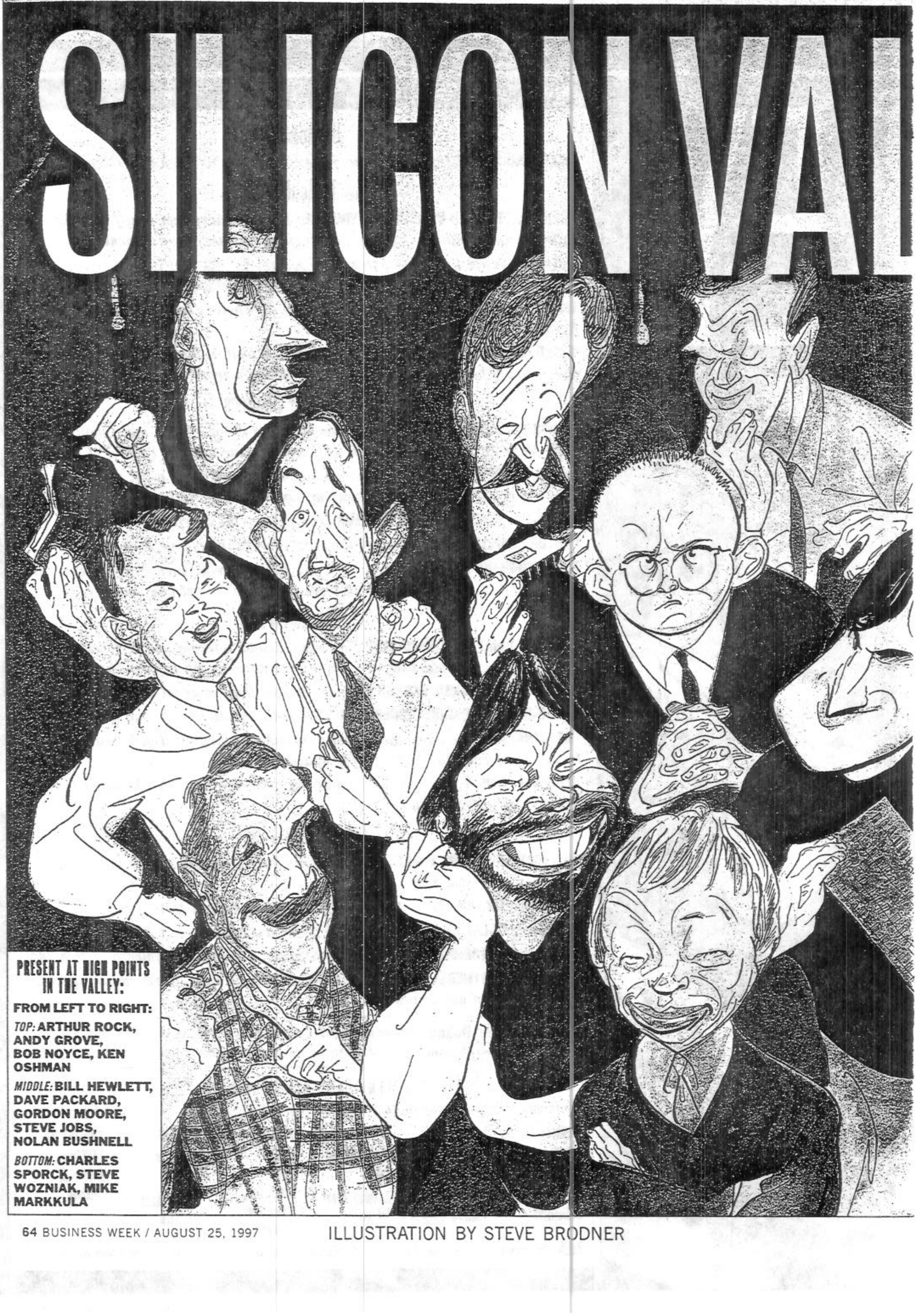
600,000 Mailing

Response	2%			3%			4%		
Average Order	$30	$35	$40	$30	$35	$40	$30	$35	$40
Sales (000)	360	420	480	540	630	720	720	840	960
Gross Margin @ 55%	198	231	264	297	347	396	396	462	528
Catalog Expense including Postage	129	129	129	129	129	129	129	129	129
Fulfillment and Overhead @ 15% of Sales	54	63	72	81	95	108	108	126	144
Write-Down 10% of Sales @ 40% Markdown	14	17	19	21	25	29	29	33	38
Contribution (000)	1	22	44	66	98	130	130	174	216

SILICON VAL

13.

WHARTON REPROGRAPHICS



PRESENT AT HIGH POINTS IN THE VALLEY:

FROM LEFT TO RIGHT:

***TOP:* ARTHUR ROCK, ANDY GROVE, BOB NOYCE, KEN OSHMAN**

***MIDDLE:* BILL HEWLETT, DAVE PACKARD, GORDON MOORE, STEVE JOBS, NOLAN BUSHNELL**

***BOTTOM:* CHARLES SPORCK, STEVE WOZNIAK, MIKE MARKKULA**

ILLUSTRATION BY STEVE BRODNER

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Business Week Online Supplemental material will be available on our online magazine,
www.businessweek.com including expanded graphics, interviews, maps, and a photo scrapbook

COMPLEMENTARY COVERAGE ON CNBC

In-depth reports throughout the week of Aug. 8-15, airing at 10 a.m. and 5 p.m. EDT

AUGUST 8	AUGUST 11	AUGUST 12	AUGUST 13	AUGUST 14	AUGUST 15
PROFILE: Gordon Moore, Intel PROFILE: A Young Millionaire	Finding Capital PROFILE: Ann Winblad, Venture Capitalist	Getting Great Talent Keeping Great Talent	PROFILE: Frank Quattrone, Investment Banker	Employee Burnout Real Estate Squeeze	LIFESTYLE: A Case Of Overload

PLUS: *Interviews featuring the stars of Silicon Valley and BUSINESS WEEK reporters all week.*

HOW IT REA

WHO COULD HAVE DREAMED, 40 YEARS AGO, THAT THE EIGHT disgruntled engineers who marched out of Shockley Semiconductor Labs in Mountain View, Calif., would set in motion one of the most amazing chains of events in American business history? They would come to be known as the Traitorous Eight, young men with an average age under 30, each with his genius barely tapped. Among them were visionaries such as Robert N. Noyce, Gordon E. Moore, and Eugene Kleiner. They quickly founded Fairchild Semiconductor Corp., a pioneer in creating semiconductor chips from silicon alone. More important, they began an entrepreneurial tradition that planted the seeds that became Silicon Valley.

Look at what they've wrought. Noyce and Moore went on to found mighty chipmaker Intel Corp., which led to at least eight more spin-offs, and Kleiner helped stoke the Valley's money machine when he launched the region's premier venture-capital firm, Kleiner Perkins Caufield & Byers. Today, there are some 7,000 electronics and software companies and thousands of startups here, with 11 companies being created every week—all crammed into a 50-mile-long corridor, like transistors on a powerful chip.

What transformed a patch of prune orchards into the epicenter of global technology, where 11 new companies are created every week? BUSINESS WEEK offers an in-depth look at what makes Silicon Valley tick

The combined effect is electrifying. For the past four years, the Information Revolution has driven the U.S. economy and touched lives around the world. While enhancing efficiency even as companies slim down, the mere production of computers and semiconductors accounted for 45% of U.S. industrial growth. And nowhere is that engine humming louder than in Silicon Valley, where 20% of the world's 100 biggest electronics and software companies have taken root. Indeed, the $450 billion market value of the publicly held tech companies in and around the Valley is approaching that of the entire French stock market.

The resulting wealth is staggering. Last year, on average, a Valley company went public every five days, minting 62 new millionaires every day. Wages grew 5.1%—five times the national average. And now, T-shirted tycoons are plunking down cash for million-dollar homes in exclusive enclaves such as Saratoga and Los Altos Hills. Says L. John Doerr, a partner at Kleiner: "This is the largest single creation of wealth and economic activity to be seen in a compressed period of time."

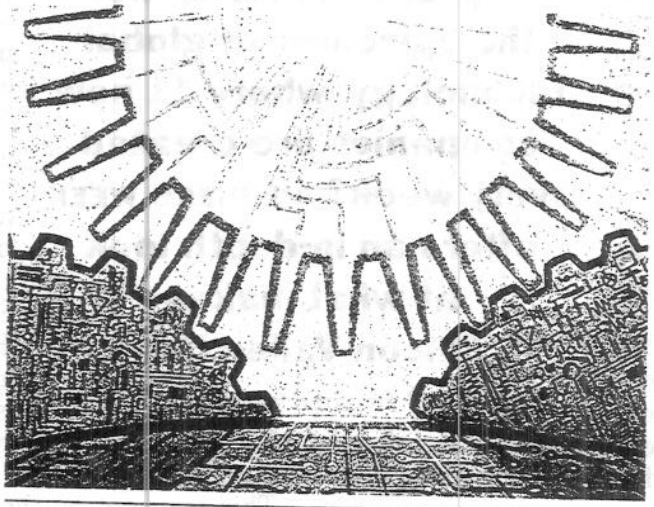
This may not be the Industrial Revolution, but in this technology-blessed realm, the much-lauded postindustrial society is a reality. Here you can reap wealth from sheer brainpower, with most of the manufacturing and assembly done elsewhere. True, the median home price in June hit $319,000, out of reach for 70% of Valley residents. Yet such concerns haven't slowed the influx of entrepreneurs from around the world (page 123).

How did Silicon Valley reach this zenith? What transformed a former patch of apricot and prune orchards into the epicenter of global technology? And how does this fearless embrace of innovation really work? Over the past two months, BUSINESS WEEK's staff has augmented years of Valley coverage with more than 300 interviews with movers and shakers, behind-the-scenes power brokers, and the rank and file to scope out what makes the Valley tick.

What we found was a huge brain trust, companies galore to service the tech machine, and a

LY WORKS

daredevil, risk-taking culture. To be sure, the universities in the region have been a powerful contributor. In particular, Stanford University professor Frederick E. Terman set the tone in the 1930s by fostering entrepreneurship and technical excellence. His legacy is a rich one. He encouraged two of his students, William Hewlett and David Packard, to turn their idea for an audio oscillator into a company. What followed was not just the birth of a powerhouse but a series of Hewlett-Packard Co. progeny that populated the region with new technologies (page 82).



TIM GRAJEK

This process has built a critical mass in the Valley, where the ability to transform a concept into a company has reached an art form. The tech infrastructure includes everything from venture capitalists to custom chip designers. "There are a lot of people in Silicon Valley who can put companies together for you in an afternoon," boasts Steven P. Jobs, co-founder of Apple Computer Inc. and NeXT Software Inc. (page 106).

That's just part of the formula. A big chunk of the equation is the Valley's culture—that component that's usually discounted as too squishy to quantify. In this case, it has put an indelible risk-taking stamp on the way the Valley operates. Combine that with the paranoia, born out of the bust years of 1985-86, when computer-industry woes wiped out jobs and some began calling it the Valley of Death, and the result is a hypercompetitive environment where seven-day workweeks have turned companies into 24-hour communities (page 68).

The Valley has its flaws. Not only is it expensive and overcrowded but the frenetic pace leaves little time for relationships and family (page 134). And, despite the Gold Rush atmosphere and a claimed meritocracy where all that counts is smarts and hard work, there are few women running companies and wielding influence (page 136).

Still, businesses around the globe can find lessons here: Take risks, then create an environment for incubating ideas. Add speed. Add supercompetitiveness. And never rest on your laurels (page 146). The Valley has much to celebrate. So, on its big 40th, we offer a look at a place where amazing things happen. □

'WHAT MATTERS IS HOV

What makes the Valley go round? Good ideas, mostly—plus a unique, risk-taking ecosystem

They came from India, Pakistan, and the heartland of America, by way of Illinois, Boston, and North Carolina. The three men quit good academic jobs, left their homes, and packed up their cars for the long drive across the U.S. Their Conestoga wagons were a Mazda, a Toyota, and a Jeep. Their campfire stories were told over cellular phones as they barreled across the plains. Their dream was to build a high-tech company, and they believed to do that, they had to get to Silicon Valley. "We're coming, no matter what," Resve Saleh recalls telling a venture capitalist on the phone. "We have to be near Intel."

The trek paid off. In an office park five minutes up the road from Intel, the trio has launched Simplex Solutions, which makes software for simulating chip designs. Just two years after their cross-country pilgrimage, the company has raised $11 million and employs 55 people. Simplex' software already has won over such customers as Silicon Graphics Inc. and Hitachi Ltd. Now, Saleh and his partners are racing toward a new milestone: taking their company public within the next two years. Marvels the 40-year-old Saleh: "This has exceeded our wildest expectations."

PUMPING UP. Everyone else's, too. Silicon Valley. Rich in ideas. Richer in dollars. And all on the back of the biggest industrial revolution since the internal-combustion engine: computer technology. Some 20% of the world's 100 largest high-tech companies make their homes here. Zip 10 minutes down Highway 101, the main artery that hums through the Valley, and you pass powerhouse after powerhouse: Intel, Cisco Systems, 3Com, Sun Microsystems, Netscape Communications—those five alone boast combined revenues of $40 billion and a $257 billion market capitalization. More than the market value of General Motors, Ford, and Chrysler combined.

The region is intoxicated with such successes. In the past two years, the Internet craze and hot new startups pumped up an already vibrant economy into one busting at the seams. In 1996, on average, one Valley company went public every five days, adding 62 new millionaires every 24 hours. More than 50,000 new jobs were created, while wages grew five times the national average. Last year, the region led the U.S. in worker productivity and export growth. "This is an economic miracle taking place, right before our eyes," says Thomas M. Siebel, the founder of Siebel Systems Inc., a software maker that raised $33 million when it went public in June, 1996.

Such vitality has transformed Silicon Valley into the quintessence of the American Dream: Any good idea in a garage can turn into a gold mine. No pedigree required. What's more, a big

For more on the workplace: See CNBC at 10 a.m. and 5 p.m. EDT Aug. 12; McNealy at noon Aug. 14

How the Valley Began... and How It Grew

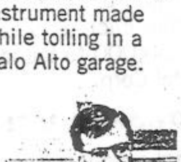
PACKARD

1931

Stanford sophomores David Packard and William Hewlett become friends as benchwarmers on the varsity football team.

1938

Fred Terman, Stanford professor of electrical engineering, loans Hewlett and Packard $538 to produce an audio oscillator, their first instrument made while toiling in a Palo Alto garage.



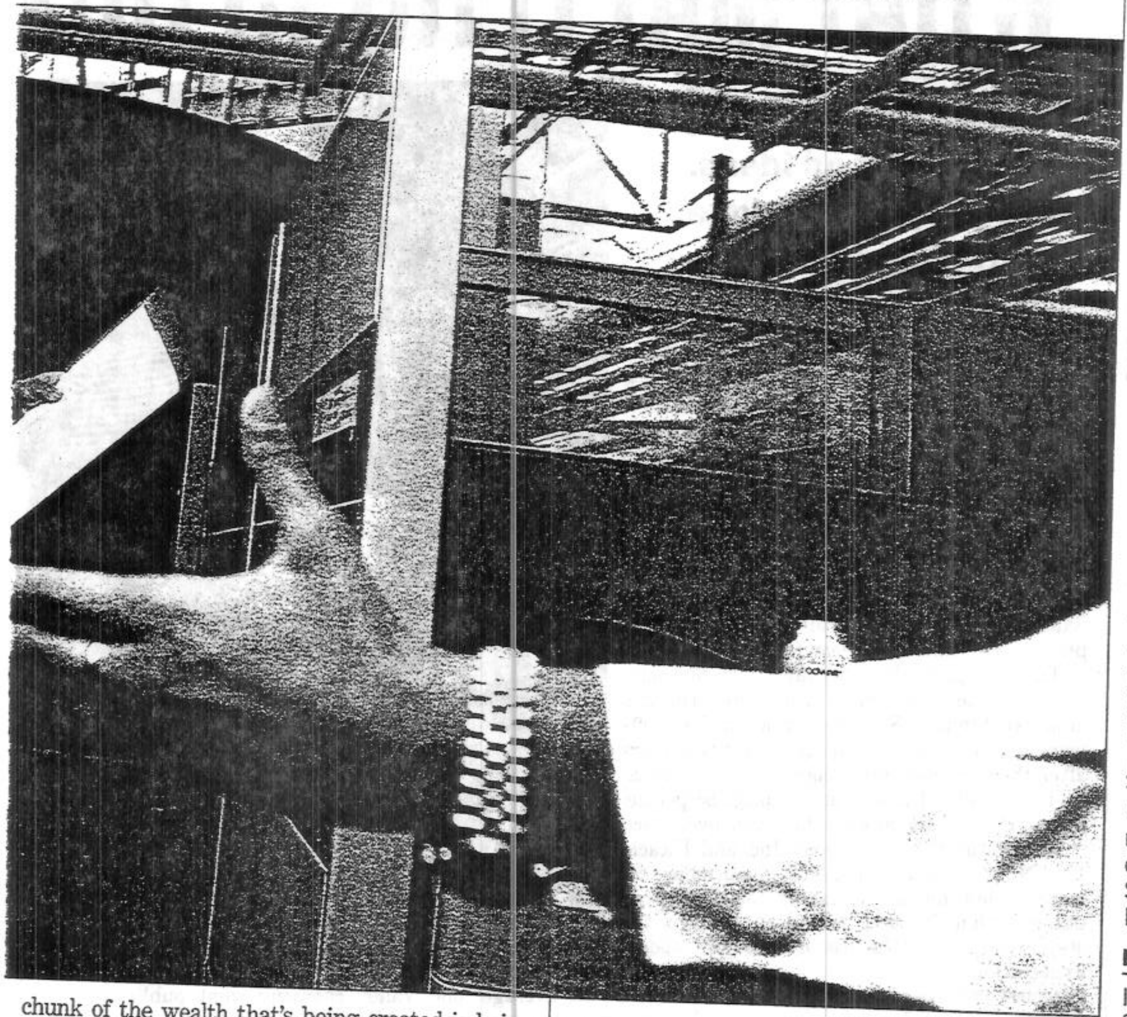
TERMAN

1955

Dr. William Shockley, co-inventor of the transistor at Bell Labs, returns to his hometown of Palo Alto and founds Shockley Labs Inc.

LARGE PHOTOGRAPHS BY MARK RICHARDS/CONTACT, SMALL PHOTOGRAPHS BY STANFORD UNIVERSITY NEWS SERVICE

V SMART YOU ARE'



chunk of the wealth that's being created is being distributed far beyond the corner offices, thanks to the Valley's stock-option culture where employees can buy shares in startups and giants alike at prices below market value—then cash in big when the stock takes off.

That has made this 50-mile-long corridor, reaching from San Jose to San Francisco, the ultimate destination for those drawn to the digital land rush. In 1995 and 1996, Saleh's company was just one of 900 startups that set up shop here. And the pace is only accelerating: In 1997's first quarter, 147 new hopefuls joined the ranks, according to Price Waterhouse. "It's an elixir that you breathe in the air as you come to this part of the world," says Christos M. Cotsakos, CEO of Palo Alto-based online brokerage E*Trade Group Inc., which went public last summer, raising $46 million. "I have never seen anything like this. This is Mecca."

EXCITE
Redwood City

Employees use bicycles to zip around the company's cavernous headquarters

Mecca maybe, but not heaven. The Valley has its dark side. For one, it's expensive to live here—the median price of a single-family home hit $319,000 in June, up 14% from a year ago and out of reach for 70% of the residents. Anyone caught on the clogged 101 knows that traffic delays are just one of the aggravations in the jam-packed Valley. And the reality is that few dreams are realized—only one in 10 startups hits it big, six limp along, and the rest are destined to implode, shattering dreams and swallowing hopes.

But that one that makes it—ah, that not only

SEPTEMBER, 1957

The so-called Traitorous Eight, including Gordon Moore and Robert Noyce, walk out of Shockley Labs

MOORE

and found Fairchild Semiconductor, the first company to work exclusively in silicon.

JULY, 1959

Robert Noyce of Fairchild files a patent for the integrated circuit.

1964

Gordon Moore projects the number of transistors that can fit onto a chip will double every two years. This will be known as Moore's law.

JULY, 1968

Noyce and Moore resign from Fairchild. Each puts up $250,000 to found Intel Corp.

NOVEMBER, 1971

Intel produces the first microprocessor, which is called the 4004.

NOVEMBER, 1972

Nolan Bushnell, who

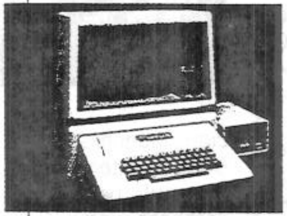
quit Ampex and founded Atari with $500 out of his pocket, ships the pioneering Pong video game.

APRIL, 1976

Steve Jobs and

LARGE PHOTOGRAPHS BY MARK RICHARDS/CONTACT; (TOP TO BOTTOM) PHOTOGRAPHS BY WAYNE MILLER/MAGNUM; SUPERPHOTOGRAPHY

Steve Wozniak launch Apple Computer and debut the Apple I at the Homebrew Computer Club in Palo Alto.



APPLE II

SEPTEMBER, 1976

Shugart Associates ships the first floppy disk drive for PCs.

1977

With $1,200, Larry Ellison launches Software Development Laboratories, which will become database powerhouse Oracle Corp.

DECEMBER, 1980

Apple goes public, at $22 a share, the biggest public offering since Ford in 1956.

FEBRUARY, 1982

Sun Microsystems is founded by three Stanford students, Vlnod Khosla, Scott McNealy, and Andy Bechtolsheim.

APRIL, 1983

John Sculley joins Apple as president and chief executive, signaling a new era in the Valley as T-shirt tycoons give way to seasoned managers.

SCULLEY

MAY, 1983

Philippe Kahn, the French-born, sax-playing mathemati-

brings riches but the chance for an engineer or programmer to change the way people work and play. For all the talk of money in the Valley, there is just as much verbiage about "making a difference"—in how people get information, crunch it, use it, and entertain themselves with it. "I'm not in it for the wealth anymore," says Oracle Corp. CEO Lawrence J. Ellison, who's worth $8.4 billion. Why, then? "How much difference can one person make?" he asks. "All the difference in the world."

Making millions and making a difference is the Silicon Valley mantra. But the machinations behind that—the dissection of how that really works—is a complex study in amassing a deep talent pool, building infrastructure, and then overlaying it all with a can-do, break-the-rules culture. The contribution of Stanford University and the University of California at Berkeley, which have fed the maw for brainpower, cannot be underestimated. But that was just the first component in a complex formula that, so far, has not been repeated anywhere else in the world.

Perhaps the biggest factor in Silicon Valley's success is its sheer density. The region crosses 30 city lines, but it's basically a one-industry town crammed with some 7,000 electronics and software companies, and more in the making. Even the tech heavies from elsewhere think they need a presence here—Microsoft Corp. has sales reps in Foster City and programmers in Cupertino; Sony Corp. set up a research center in San Jose; and Taiwanese PC giant Acer Inc. built research and development, engineering, and manufacturing facilities in San Jose.

That creates a synergy with exponential effect. Executives rub shoulders at work, at the corner Starbucks, and on hiking trails. A breakfast at Palo Alto's trendy Il Fornaio or Woodside's down-to-earth Buck's quickly becomes a dealfest for a venture capitalist or a jam sessio for engineers on the latest advances in gigabi ethernet. "You end up seeing each other at par ent-teacher nights," says Heidi Roizen, a fo mer Apple exec. Adds Intel CEO Andrew S Grove: "Proximity helps. People have worke with each other, competed against one anothe We have such a rich ecosystem."

The result is nonstop cross-fertilization. Tak Netmosphere Inc., an Internet Java softwar startup. Like so many Silicon Valley stories, i began with a chance meeting between an engi neer and a marketer at a January, 1996, party i San Francisco. Eric Ly, now 28, had designe software for General Magic Inc.; Heather Rose

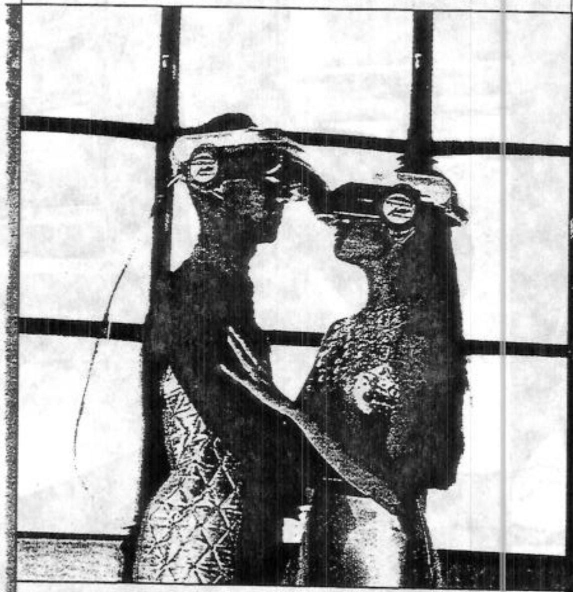
NETSCAPE
Mountain View

Can't get to a dentist? There's care available in the parking lot

LARGE PHOTOGRAPHS BY MARK RICHARDS/CONTACT; (TOP TO BOTTOM) PHOTOGRAPHS BY APPLE COMPUTER, INC.; ROBERT HOLMGREN

now 33, was the product manager who launched Shockwave animation software for Macromedia Corp. Both were looking for new challenges on the Net. Ly obtained $300,000 in private seed funding, and the San Mateo-based company has launched its first product: Net software for managing big projects. Now, Rose is looking for $3 million in venture capital.

This is where the Valley's impressive infrastructure comes into play. Over the years, the region has fine-tuned the task of transforming concepts into companies. About half the nation's 600 venture-capital firms are based in the Valley, according to the National Venture Capital Assn. And many of them have offices on Sand Hill Road in Menlo Park, smack dab in the center of the action. These players fork over the necessary cash and knowhow in hopes of 30% returns or a megahit.



VIRTUAL WEDDING
San Francisco

Even wedding vows are exchanged online in the Valley

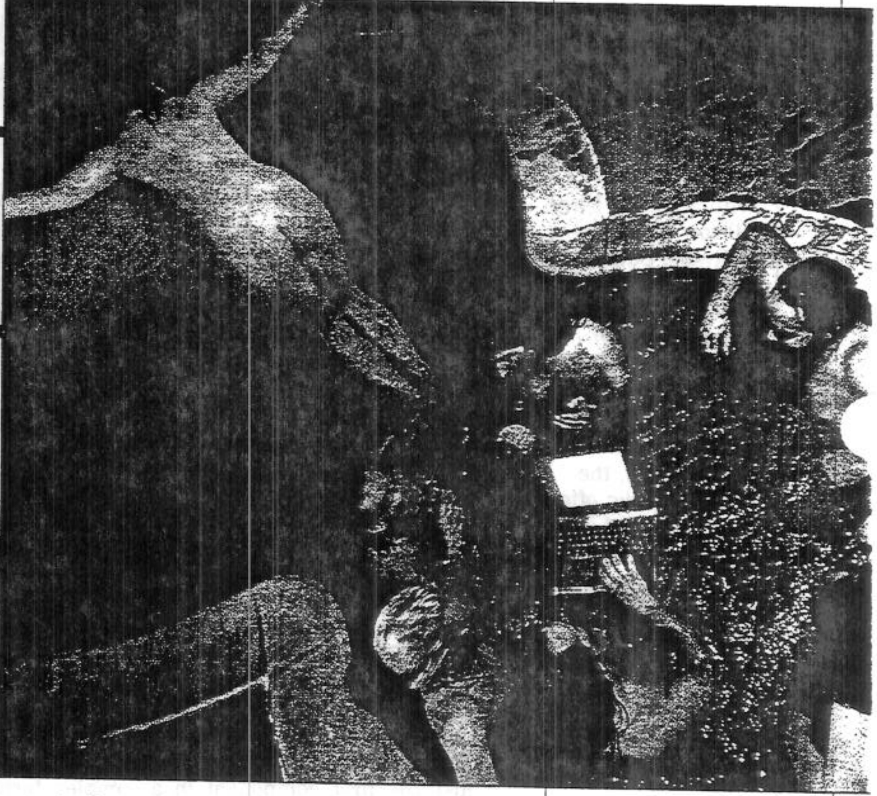
They are essential to the Valley. Over the past four years, venture capitalists have plunged some $5.5 billion into Valley tech startups, 37% of all information-technology investments in the U.S., according to VentureOne Corp. And they're not alone. Hundreds of other supporting-cast members have been drawn to feed on the tech food chain, from lawyers who know the ins and outs of software and patents to suppliers of machine tools—all with ready expertise for a novice entrepreneur.

It's an instant company-making machine. With the touch of a button, boilerplate stock-option plans and prospectuses roll out of the word processors at the law firm of Wilson, Sonsini, Goodrich & Rosati in Palo Alto. The nation's largest human-resources outsourcing firm, TriNet Employer Group in San Leandro, can set up everything from payroll processing to workers' compensation insurance to a customized benefits plan overnight, says CEO Martin Babinec.

MACROMEDIA
San Francisco

A slide between floors helps get engineers around swiftly

Even today, Sun Microsystems Inc. CEO Scott G. McNealy marvels at how fast the cogs whirl. In 1982, he and two other 27-year-olds with close to zip experience managed to raise $250,000 in venture capital on the whisper of an idea—making powerful workstations. "We were able to open a checking account on our word. We were able to rent buildings without showing ID. We were able to get phone lines, and Wilson Sonsini filled a huge boardroom table full of documents for us to sign," he says. "Actually, on their word processor, they just changed a previous name to our name."



GEEK HOUSE
Santa Cruz

Programmers and engineers hit the hot tub, laptop in hand

But this is just half the formula. A big part of Silicon Valley's success comes down to something that cannot be quantified: the culture. This is one of the most unusual business environments on the planet, where the traditional ways of doing business have been turned on their ear. At the core of this is an all-things-are-possible attitude, an unerring belief that a new technology, an entrepreneur's vision of the digital future, is the absolute right one. And if it isn't, well, the next one will be.

It is Daredevil Business 101, where risk-taking is the norm and the penalty is not for failure but for not trying. This has created a wide swath of so-called repeaters, entrepreneurs who may start a company and crash but will try it again with the blessing and the bucks from venture backers. This is how the theory goes: Good

KAHN

cian, launches Borland International. He would become a database king before Borland started to fizzle in 1993.

JANUARY, 1984

Apple introduces the Macintosh.

DECEMBER, 1984

Husband-and-wife team Leonard Bosack and Sandra Lerner found Cisco Systems to develop networking technology.

JUNE, 1985

Steve Jobs is ousted from Apple after losing a power struggle with Sculley. He founds NeXT Inc.

LARGE PHOTOGRAPHS BY MARK RICHARDS/CONTACT; (TOP RIGHT) PHOTOGRAPH BY ANDY FREEBERG

DECEMBER, 1989

Conner Peripherals shoots to $705 million in revenue, the fastest-growing manufacturing startup in history.

MARCH, 1993

PENTIUM CHIP

Intel unveils its most powerful processor to date, the Pentium, which establishes its dominance. Today, Intel's market capitalization is a stunning $163 billion.

APRIL, 1994

Jim Clark and Marc Andreessen found Netscape Communications as Mosaic Communications. Netscape goes public in August, 1995, at 28, jumping to 75 before closing at 58 the first day.

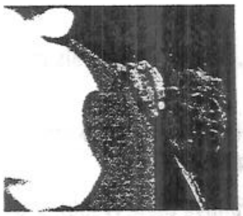
NOVEMBER, 1995

CARTOON HIT

Steve Jobs's Pixar releases the first computer-animated hit film, *Toy Story.*

JULY, 1997

Apple CEO Gil Amelio resigns and Jobs takes an "expanded role."



AMELIO RESIGNS

ideas are the most precious commodity, and an entrepreneur who has them and stumbles comes away with enough lessons to get it right the next time.

Lucky for William G. Paseman, a former oil-rig worker from Houston who got an engineering degree from Massachusetts Institute of Technology and headed West. In 1986, he started Atherton Technology to make object-oriented programming tools for speeding up software development. For five years, he says, "we made every mistake we possibly could. You could have burned a BMW in the parking lot every day at our run rate." The company went bust.

But soon, Paseman had another idea. He discovered that companies doing business in Europe had trouble working with the varying electrical-emissions standards in different countries. He came up with a software program to help them navigate "the pain." Knock, knock—he went calling on his Atherton venture backers, including the Mayfield Fund. Once again, they took out their checkbooks to the tune of $2.9 million, backing Calico Technology Inc. Says Mayfield partner Yogen K. Dalal: "Failure is not a black dot in the Valley, it's a badge of merit."

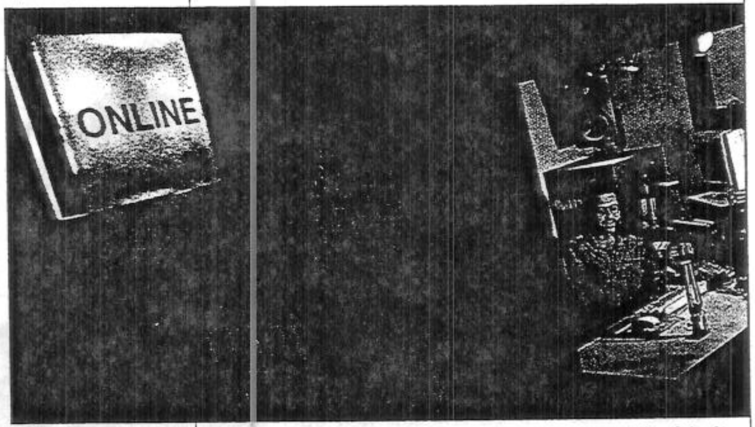
IT'S THE IQ. The only thing more vital than taking a risk is having an idea. The push to come up with bigger, better, faster, and cheaper technology has thrown open the door to all comers. In the Valley, people rarely care what school you attended, your ethnic background, or your family pedigree. They want proof of IQ. And with the exception of the lack of women and African Americans heading companies, it works. "Silicon Valley is a meritocracy," says Steve Jobs, co-founder of Apple Computer Inc. "It doesn't matter what you wear. It doesn't matter how old you are. What matters is how smart you are."

That worked to the advantage of two entrepreneur-wannabes then at FirePower Systems. The pair went to see venture capitalist Steve Jurvetson at Draper Fisher Jurvetson. But the investor was unimpressed by their idea for database software for the Net. As they were packing up to leave, he asked: "Do you have any other ideas?" Sabeer Bhatia, one of the engineers, said they'd noodled over a scheme to offer free, advertising-supported E-mail over the Web. A week and a half later, the venture capitalists ponied up $300,000 (no business plan required), and Hotmail was born. Today, it claims some 4 million subscribers.

Such reinvention is the lifeblood of Silicon Valley. Throughout the decades, from the days when industry pioneers Charles Sporck and Ken Oshman and venture backers Arthur Rock and Mike Markkula were the Valley's movers and shakers, the Valley has constantly remade itself just in time for the Next Big Thing. When the computer industry went into a tailspin from 1984 to 1987 and high-tech employment plunged 11%, to a low of 191,900 jobs, the Valley emerged with desktop-publishing software and powerful workstations.

POWER BROKERS. And nowhere were techies quicker to latch on to the Big Kahuna—the commercialization of the Net. Now, the Valley, already in overdrive, has entered Internet time.

Kleiner Perkins Caufield & Byers partner L. John Doerr, one of the Valley's top power brokers, carries a pager, phone, personal digital assistant, or laptop wherever he goes—he can't risk missing an opportunity. John R. Koza, a consulting professor of computer science at Stanford, has a massively parallel computer in a spare room of his hilltop home so he can plumb the frontiers of programming at all hours. Who knows—maybe Koza, who made his fortune designing instant lottery programs, might hit it big again.



CNET
San Francisco

The radio-like booth flashes a different announcement

These days, companies are trying every trick imaginable to cut even minutes out of normal routines. Macromedia Inc., a multimedia software company, has installed a slide between floors to get engineers to their destinations fast. Internet startup Excite Inc. has stashed pink bicycles throughout its offices so workers can zip to one another's cubicles in their cavernous digs.

Now, Valley companies are even beginning to look like 24-hour planned communities. At Netscape, a Winnebago stocked with dentists shows up twice a week for workers who can't find time for checkups. At networking maker 3Com Corp., employees can get film developed at the company store and their car washed in the parking lot. And weary engineers at Net startup PointCast Inc. keep washers and dryers humming around the clock. "These startups," says Marc Andreessen, co-founder of Netscape, "demand virtually a Herculean effort from all their employees."

So far, they're getting it. Which is why Silicon Valley keeps spinning good ideas into gold.

By Andy Reinhardt, with Joan O'C. Hamilton and Linda Himelstein in Silicon Valley

LARGE PHOTOGRAPHS BY MARK RICHARDS/CONTACT. (MIDDLE LEFT) PHOTOGRAPH BY THE WALT DISNEY COMPANY

STARTING UP AGAIN—AND AGAIN AND AGAIN

Quitting while you're ahead is an alien concept to most Valley entrepreneurs

For most of America, long-term job security died in the early 1990s on the altar of corporate downsizing. But in Silicon Valley, security was never an issue. Chucking your job—to start a company—has always been a rite of passage. "It's part of the culture here," a way to gain status, says John W. Jarve, partner at Menlo Ventures in Menlo Park.

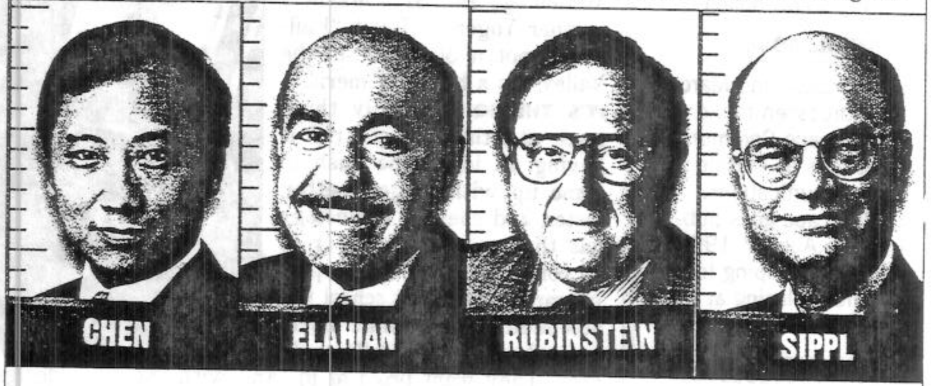
Some status seekers just can't get enough. Their ladder-climbing has spawned an elite subculture of serial entrepreneurs, including two dozen inveterates you might call "threepeaters"—all with three or more startups to their credit. Woodside resident Nolan K. Bushnell tops the list with more than 20 to his name, though most of his ventures were transplanted outside Silicon Valley. Others, such as computer genius Gene M. Amdahl and Raychem Corp. founder Paul M. Cook are well past retirement age. There's even a couple as wedded to starting companies as they are to each other (page 102).

These repeat entrepreneurs amaze William A. Sahlman, a Harvard business school professor who tracks their adventures. "It's a rare, rare person who has the ability to do two things successfully." Typically, Sahlman notes, venture capitalists score big about 15% of the time. While the success rate for repeaters might be double that, he says, "it's not 80%." Even Bushnell's average is under 50%.

"GREAT FEELING." What drives these daredevils to take the risk? Different things, but money isn't the primary motivation, says Pehong Chen. Born in Taiwan in 1957, he founded Gain Technology Inc. in 1989 with $4,000 and three years later sold the multimedia software house for $100 million. "I really tried to retire, but after three months, I got restless," he says. So he helped start Siebel Systems Inc., a producer of sales-automation software. Today, he dotes on BroadVision Inc. and its personalized Internet shopping system. "I need to create stuff: new technology, new solutions, new companies. It's a great feeling you can't get any other way."

Most serial entrepreneurs second those sentiments. Says 40-year-old Steven T. Kirsch, who attained threepeater status in 1994 with Infoseek Corp.: "You're doing something significant—changing the world and making it a better place." L. Curtis Widdoes Jr., 45, gets his kicks from "working with good people" and creating innovative products. "The easiest path to that is starting a new company," he says. Last year, he founded his third, 0-In Design Automation Inc.

Baby No. 3 for Roger J. Sippl is Visigenic Software Inc. His 17% stake is worth $25 million, and two venture-capital investments netted $11 million on top of his previous startups. So piling up personal wealth "isn't really important anymore," he says. "At some point, you decide how much you're going to leave your children, and the rest goes to charity." Sippl, 42, figures he'll donate most of his future earnings to



PHOTOILLUSTRATIONS BY ROGER KENNY

Serial Entrepreneurs: Once Is Never Enough

ENTREPRENEUR, AGE	COMPANIES FOUNDED (STARTUP DATE)
GENE M. AMDAHL, 77	Amdahl Corp. (1970), Trilogy Ltd. (1980), Commercial Data Servers Inc. (1994)
GORDON A. CAMPBELL, 53	Seeq Technology Inc. (1981), Chips & Technologies Inc. (1984), 3Dfx Interactive Inc. (1994)
PEHONG CHEN, 40	Gain Technology Inc. (1989), Siebel Systems Inc. (1993), BroadVision Inc. (1993)
KAMRAN ELAHIAN, 42	CAE Systems Inc. (1981), Cirrus Logic Inc. (1984), Momenta Corp. (1989), NeoMagic Corp. (1993), PlanetWeb Inc. (1996), Centillium Technology (1997)
STEVEN T. KIRSCH, 40	Mouse Systems Corp. (1982), Frame Technology Corp. (1986), InfoSeek Corp. (1994)
D. T. "TOM" MITCHELL, 55	Seagate Technology Inc. (1979), Conner Peripherals Inc. (1986), JTS Corp. (1994)
SEYMOUR I. RUBINSTEIN, 63	MicroPro International Inc. (1978), Surpass Software Systems (1987), Prompt Software Inc. (1995)
ROGER J. SIPPL, 42	Informix Software Inc. (1980), Vantive Corp. (1990), Visigenic Software Inc. (1993)

SILICON VALLEY MOVERS & SHAKERS

CLOSE UP

Love Among The Digerati

No matter how commonplace entrepreneurs become, husband-wife teams will always be rare. The stress is just too intense. That's why Silicon Valley is toasting Judith L. Estrin and William N. Carrico, whose marriage has survived not one startup, but three.

CARRICO AND ESTRIN: HE'S PRECEPT'S STRATEGY WONK, SHE'S THE "PEOPLE PERSON"

Their first venture was Bridge Communications Inc., a networking company founded in 1981. By 1987, when 3Com Corp. acquired it for $235 million in stock, Bridge was raking in $70 million a year. Next, in 1988, they started Network Computing Devices Inc.—which makes exactly that. The couple took it to $140 million in sales in 1995, then left to found Precept Software Inc. Last year, Precept shipped about $1 million worth of "multicasting" software for putting real-time video on corporate networks.

The couple's business relationship started in 1979 at chipmaker Zilog Inc. After co-founder Ralph Ungermann left to form Ungermann-Bass Inc., Estrin was promoted to engineering manager of the systems division. Carrico was recruited to help turn the unit around, and the pair collaborated on a networking project called Z-Net. It flopped, but a romance blossomed as they hashed out plans for Bridge, and in 1987 they tied the knot.

Often dubbed the Bill & Judy Show, the duo blends a Mrs. Outside, Mr. Inside set of personalities. "I'm the people person," says Estrin, who's president of Precept and thrives on dealing with customers. Chairman Carrico is the strategist but gets involved in operations "when aggressive action is called for"—at which point, the preferred moniker is "Punch & Judy."

REBOUNDS. Joint entrepreneurship can also shred a marriage. Sandra Lerner founded Cisco Systems Inc. in 1984 with her husband, Leonard Bosack. By 1990, each had amassed about $100 million in stock, but their marriage was on the rocks. Lerner blames "years of overwork, under-money, and having to make all decisions for the benefit of the company, not the marriage." After an amicable divorce, Bosack founded XKL Systems Corp. in 1991, while Lerner launched Urban Decay, a cosmetics firm, in 1995.

Married or divorced, starting up companies seems to get easier with practice. It's a matter of having the contacts, knowing the pitfalls, and nabbing the capital. Judy Estrin says funding her first company took six months "and countless presentations." For No. 2, NCD, two phone calls landed $5 million in minutes. When word of Precept's founding got out in March, 1995, Estrin says: "We had venture capitalists calling us and begging us to take their money." When it comes time for No. 4, the phones will probably ring again.

By Otis Port in San Mateo

Stanford University and cancer research.

For some, there's a need to prove that the first success was no fluke. Seymour I. Rubinstein, 63, formed MicroPro International Inc. in 1978 with $8,500 and launched WordStar, the best-selling word processor of the 1980s. He tried for a repeat in 1987 with QuattroPro, a spreadsheet program developed by his startup, Surpassed Software Inc., but it fell short. "I'm still searching for nirvana," he says. His latest shot: two-year-old Prompt Software Inc., which sells a search engine called WebSleuth.

Kamran Elahian admits he was "still hungry" after starting his first company, CAE Systems Inc., in 1981 at the age of 27. In 1984, Tektronix Inc. bought CAE for $75 million, but Elahian's investors took the lion's share, leaving him with only a few million. So he launched chipmaker Cirrus Logic Inc. It went public in 1989, valued at $150 million. Sure he had the Midas touch, Elahian took on computers with Momenta Corp. in 1989. Splat. "Investors threw $40 million at us," he laments. "We lost it all in three years."

SHORT MEMORIES. Fortunately for Elahian, the Valley deems failure not only inevitable but valuable. After licking his wounds for 10 months, the Iranian-born entrepreneur had no trouble raising $11 million to start NeoMagic Corp., another chip company. Michael Moritz, a partner at Sequoia Capital, put up $3 million, noting that entrepreneurs who have suffered a setback can be better bets than those who have only enjoyed success. NeoMagic paid off big, going public last March with a valuation of $300 million. Says Elahian: "All my sins were forgiven."

Elahian, like Sippl, wants to give something back. In May, 1996, he started Project NEAT, a nonprofit push to bring Internet access to small schools in remote areas of the globe. It's linked to a for-profit venture called PlanetWeb Inc., which markets software that turns video game machines and settop boxes into low-cost Net terminals. Elahian installed PlanetWeb systems in 1,000 schools last year and has vowed to put them in 10,000 this year.

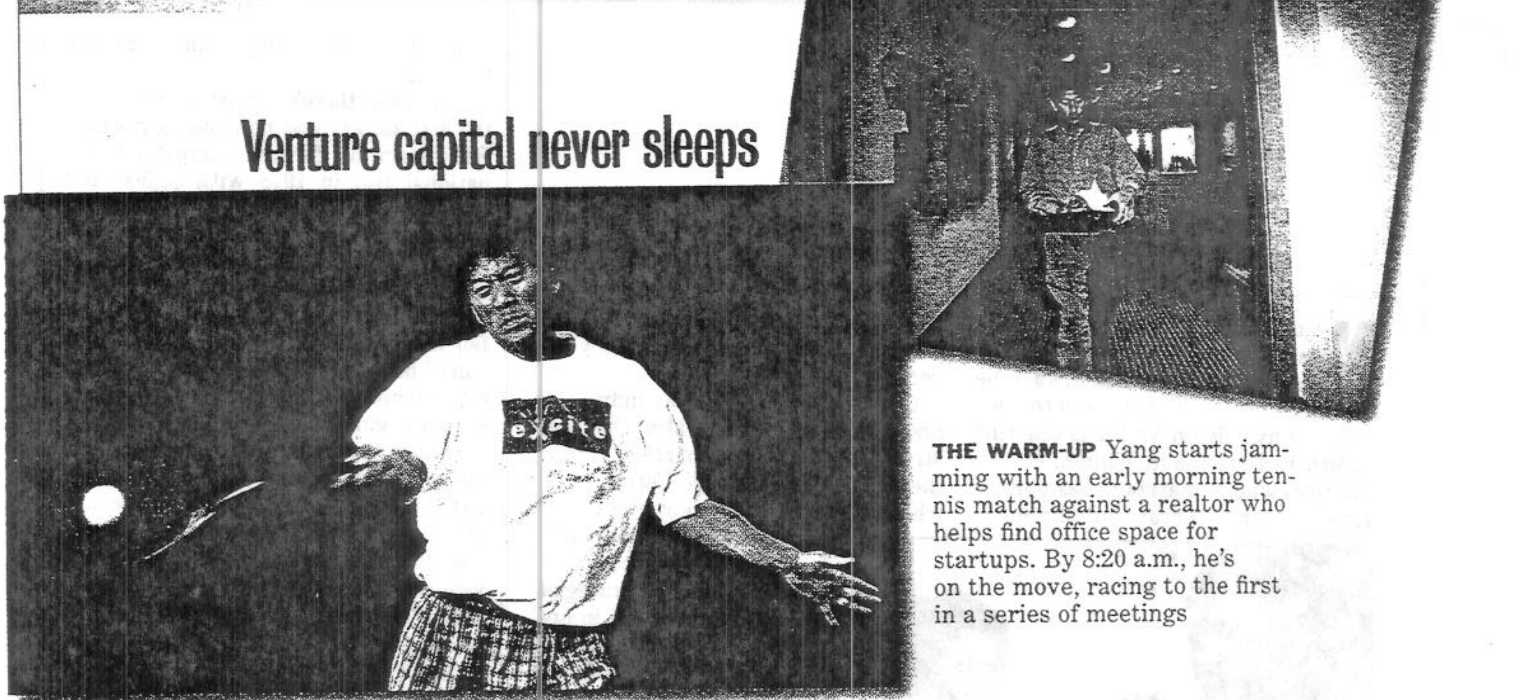
Of course, kids around the world will also want to chat with one another on the Net, in living color. Finding a cheap way to do that is a job for startup No. 6, five-month-old Centillium Technology. In the world of serial entrepreneurs, second chances can become a habit. And the only unforgivable sin is never to try in the first place.

By Otis Port in San Mateo

ANDY FREEBERG

SILICON VALLEY **MOVERS & SHAKERS**

Venture capital never sleeps



THE WARM-UP Yang starts jamming with an early morning tennis match against a realtor who helps find office space for startups. By 8:20 a.m., he's on the move, racing to the first in a series of meetings

THE GREAT HUNT FOR HOT IDEAS

What starts with a bagel may end with another Yahoo!

The art of the deal begins, in Palo Alto, Calif., with breakfast at Hobee's. By 7:30 a.m., Geoffrey Y. Yang, a 38-year-old venture capitalist, has settled into his table, this morning with entrepreneur Kingston Duffie. The two seem like old friends, which isn't so surprising: Yang's Institutional Venture Partners made $10 million, a 250% return, in April when Duffie, a 36-year-old engineer, sold his first company, Whitetree Inc., to Ascend Communications Inc. for $66 million. Now, they are hashing out Duffie's vision for a second startup, another telecom concept, and their conversation bubbles with talk of NSPs, DSPs, and IDSLs.

Even before the bagels and fruit shakes are carted away, Yang, who is hearing the still-fuzzy concept for the first time, offers Duffie $100,000 and an office to help him explore the idea further. His message is clear. "I want to be involved with just about whatever he does," says Yang. "Everyone will be all over Duffie. I'm trying to lock this up before anybody else knows about it." No commitments are made, but Yang suspects his no-strings-attached overture has served its purpose.

Down the road at Il Fornaio, another popular Valley breakfast spot, venture capitalist Gill Cogan is engaged in a similar ritual. His target is Joseph J. Raffa, a 36-year-old marketing whiz who made his name at Hewlett-Packard Co. and software maker Synopsys Inc. Cogan, a partner at Weiss, Peck & Greer Venture Partners, wants Raffa to help run one of the companies in his $205 million fund. He already has bought Raffa a fancy cell phone and given him the unique opportunity to invest in some of the firm's deals. "It will pay off handsomely," says Cogan. "We know he's going to do something good, and we want him to call us first."

More on finding capital: See CNBC at 10 a.m. and 5 p.m. EDT Aug. 11

Dealmaking, Silicon Valley-style. Nearly every day of the week, venture capitalists, entrepreneurs, and résumé-bearing executives pile into the same half-dozen haunts, constantly bumping into one another as they attempt to seal the deal of the day. The object of the game: money. Venture capitalists, in fierce competition with one another for the next Netscape Communications Corp. or Yahoo! Inc., want to multiply it. Entrepreneurs simply want it.

Without their frenetic mating dance, Silicon Valley couldn't be the technological mecca it is today. Indeed, no place else in the world hosts so many venture investors eager to dump money into the untested ideas of young entrepreneurs—all on the off chance that they can overcome inevitable startup snafus to reach powerhouse status. Of some 600 venture firms nationwide, about half call Silicon Valley home, according to the National Venture Capital Assn. These firms establish funds and then drum up the money—no hard sell these days. Money flows in from pension funds, insurers, and endowments around the world, all hoping to achieve annual returns as high as 50%. Then the hunt for hot deals is on.

Outside of Hollywood, this is, perhaps, the business world's ultimate continuous schmooze-fest. Yang's Menlo Park-based firm alone spends some $400,000 a year on networking, with

PHOTOGRAPHS BY MARK RICHARDS/CONTACT

NEW GAME Yang holds a 9 a.m. working session with GolfWeb CEO Brent Knudsen, whom Yang funded, and venture capitalist Todd Francis

WORDS ARE MONEY All time is schmooze time, whether in the office, in the car, or visiting companies. Networking is the stuff of deals for venture capitalists

good reason. Competition for the sexiest deals and hottest talent is keener than ever as money flows into the industry at an unprecedented rate. In just four years, venture investments in Silicon Valley have soared 188%, to $2.2 billion in 1996, accounting for 35% of all information technology venture capital investments in the U.S., according to industry tracker VentureOne Corp. (chart). The Valley's share of the total has slipped in recent years, but that's because firms have put relatively more funding into the area's booming startups, which tend to require less capital per deal than young companies in later stages.

HIGH CASUALTIES. Big money, of course, is what oils the Valley's gearbox. "It really turbocharges the development of new ideas into new industries," says David Gleba, chairman of VentureOne. Yet while the flood of capital has intensified, the number of promising deals remains finite. Venture capitalists aim to multiply their money in any one company at least tenfold within four years, but a Seagate Technology Inc., which brought Yang's firm a $56.5 million profit on its $500,000 investment, is rare. Ultimately, one in three investments produces a total write-off.

To separate the gold-plated winners from the also-rans, VC firms sort through reams of prospects, evaluating ideas, management, and potential markets. New Enterprise Associates reviews 3,000 business plans each year and ends up funding just 20 companies. Hummer Winblad Venture Partners culls through 1,600 plans to come up with 10 worth seeding. "We don't want to fund dipsticks," says partner Ann L. Winblad.

But venture capitalists have become more than financial analysts with big checkbooks. Indeed, the best of the lot wear a wide array of hats—from executive recruiter to corporate strategist to networker to salesman. They're aggressive, hands-on investors, demanding an active role in setting the course for their companies. "Our job is to multiply money by a lot, not a little," says Bruce W. Dunlevie, a partner at Benchmark Capital Management in Menlo Park. "You do what has to be done."

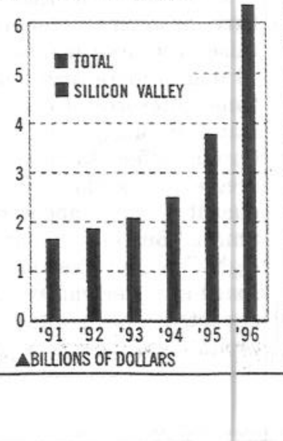
After wooing Raffa over breakfast, for example, Cogan heads to Terayon Corp., a cable-modem startup that Weiss, Peck & Greer funded in 1995. The Santa Clara company is preparing to raise its third round of financing. Cogan, whose early-round investment will be affected by the valuation from the new round, wants to preview the pitch. He is not impressed by what he sees—a verbose, poorly organized slide show. So the 43-year-old venture veteran and his partners roll up their sleeves to sharpen the company's message and spice up the graphics. "This is a very exciting company, but nobody would have known from listening to this damn presentation," says Cogan.

Often, it's the VCs' Rolodexes that make deals happen. At a recent meeting with Com21 Inc. in Fremont, C. Richard Kramlich of New Enterprise Associates promises to hook up the cable-modem company with John Sidgmore, a top exec at potential customer WorldCom Inc. Another investor, Will Hearst, a partner at Kleiner Perkins Caufield & Byers, already has introduced Com21 to senior execs at Tele-Communications Inc. and to Thomas A. Jermoluk, CEO of @Home Corp., a cable-based Net service. "They have opened the door for us," says Com21 President and CEO Peter D. Fenner.

Who you know counts for a lot in the Valley. But what you're willing to do for them counts for even more. VC legend L. John Doerr a self-described "recruiting animal," logged tens of thousands of miles over nine months, shuttling to Austin, Tex., Washington D.C., Los Angeles, and Aspen, Colo., to win Michael Long, head of software

THE CAPITAL FLOOD

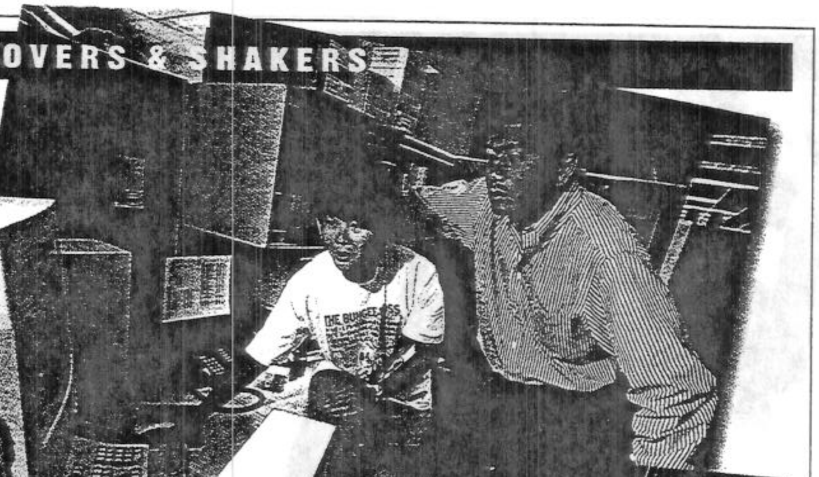
Silicon Valley companies' share of venture capital raised for technology businesses



DATA: VENTUREONE

SILICON VALLEY MOVERS & SHAKERS

THE DIRECTOR'S CHAIR At 9 a.m. the next day, he joins a board meeting at Whistle Communications with Chief Executive John Hamm (right) and board member Dave Brown



LONG DAY By midday, Yang is getting a demo of Interjet technology. And so it goes, until evening, when Yang spends time with his most important startup, daughter Megan

maker CSC Continuum Inc., for the CEO job at Palo Alto-based Healtheon Corp., a startup funded by Kleiner Perkins. When it came to finding a CEO for @Home, Doerr interviewed 55 candidates in hotel rooms across the country before settling on Jermoluk.

Benchmark Capital's Dunlevie took a different tack to snag James Jordan. In 1992, Jordan, a successful 57-year-old networking expert, was reluctant to take the helm of Kalpana Inc., a networking company that sorely needed seasoned management. Dunlevie, who had funded Kalpana in 1990, persuaded Jordan to try it for three months. When Jordan grumbled about missing his favorite pastimes, Dunlevie arranged for the exec to go salmon fishing in Alaska and (though a nonhunter himself) went dove shooting with him in New Mexico.

CHEAP CAR. When Jordan later worried about not having time for personal matters, such as selling his wife's car, Dunlevie stepped in again: "I bought this guy's car just to remove an objection to running the company," recalls Dunlevie. His efforts paid off: Jordan revived Kalpana, and in 1994, sold it to Cisco Systems Inc. for stock now worth more than $1 billion. Dunlevie's return: about $61 million on a $3.8 million investment.

The maneuvering, indeed, is ceaseless. Executives in demand can name their price. And startups with the right technology and team can play VC firms against each other to win ever-higher valuations. Who, for instance, will bag Tumbleweed Software Inc.? The Redwood City-based startup, which makes software that allows companies to send documents securely over the Internet, has pitched 20-plus Silicon Valley firms to raise $6 million. Now, 30-year-old CEO Jeffrey C. Smith gets to handpick his investors. "At this point, everyone's money is green," Smith says. "Now, it's about who would be the best partner."

On a whiteboard, he divides his suitors into five categories: in, hot, warm, cold, and out. The first cut is easy: Hambrecht & Quist, which manages a fund for Adobe Systems Inc., will win a lead position with Bessemer Venture Partners and original investor Draper Fisher Jurvetson. He dismisses the "colds" and "outs," including tony Mayfield Fund, which will invest only if Smith agrees to relinquish the helm, a request often made of bright but inexperienced entrepreneurs. The "warms" are largely axed, too—one simply because the partner on the deal got sick, another because of too few connections.

Days later, the action escalates. Venture newcomer Generation Partners raises the ante with a valuation worth $4 million more than H&Q's. At the same time, Microsoft Corp. board member David F. Marquardt, who runs August Capital, offers $3 million less but brings access to his blue-chip contacts. "Marquardt is right about his value," says Smith. "But I'm not sure he's $3 million right." When the dust clears, Smith snags a higher valuation than originally expected, and a total of $7 million in capital. H&Q kicks in $3.5 million; Bessemer puts in $2 million, with Draper Fisher taking the remaining $1.5 million. Generation, late to the party and lacking marquee value, loses out.

Will Tumbleweed prove a winner? Who knows? The sobering reality of the Valley is that much of the wooing leads to failure or mediocrity. Winblad's firm lost $1.2 million investing in Slate Corp., a pen-based computing software startup. Atherton Technology, an object-oriented software company launched by entrepreneur William G. Paseman and funded by Kleiner Perkins and Mayfield, went bust after five years in business.

Still, up and down the Valley, at Hobee's and Il Fornaio, in conference rooms and on car phones, the pursuit persists. Paseman, in fact, soon went on to form Calico Technology Inc., another software venture—funded by the same VC firms burned by Atherton. Why? Amid the bagels and shakes, across the phone lines and on E-mail, entrepreneurs and venture capitalists alike sense a glimmer of the next dazzling technology. The Big One. Says Neal Margulis, a 32-year-old who's pitching a home-computer networking company to Benchmark Capital: "It's easy to come up with $50 million niche ideas. But they aren't worth doing. When you start thinking of the ones that could be $1 billion companies, that's when it becomes interesting."

Indeed, that's when the Valley's money starts flowing.

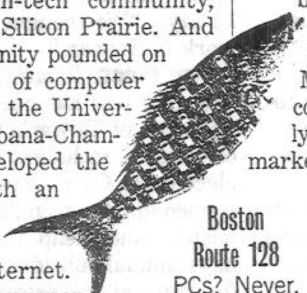
By Linda Himelstein, with Peter Burrows and Andy Reinhardt, in Silicon Valley

PHOTOGRAPHS BY MARK RICHARDS/CONTACT

IT MUST BE SOMETHING IN THE WATER

Many regions have tried to duplicate the Valley magic. None has succeeded

Illinois has long aspired to develop a flourishing high-tech community, something of a Silicon Prairie. And in 1993, opportunity pounded on the door. A group of computer science students at the University of Illinois' Urbana-Champaign campus developed the first browser with an easy-to-use graphical format for cruising the Internet. Even then, the browser, called Mosaic, appeared to have staggering potential. In the following four years, the online world would grow to 17.6 million people and the Net would explode into America's consciousness.



Boston Route 128

PCs? Never, thought the mini-computer town

What exploded in Illinois was the chance to dominate the Next Big Thing in technology. The University of Illinois and Marc Andreessen, the lead Mosaic programmer, got into an ugly spat over rights to Mosaic. Silicon Graphics Inc. founder James H. Clark recruited him to Silicon Valley and together they founded Netscape Communications Corp., now the dominant Net browser company with a market capitalization of $3.4 billion. The university tried to commercialize Mosaic through an existing Illinois company, Spyglass, but it has largely been squeezed out of the browser market and its market cap is a measly $94 million.

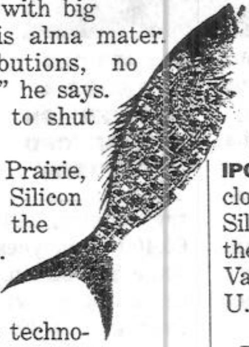
New York Silicon Alley

Web content growing from entertainment

Don't expect Andreessen, whose Netscape stock alone is worth $57 million, to help Illinois with big grants to his alma mater. "No contributions, no buildings, no nothing," he says. "They basically tried to shut us down."

Austin

Strong tech base but few local firms



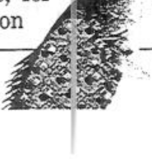
So much for Silicon Prairie, or for a dozen other Silicon Valley wannabes in the U.S. and overseas. Time and again, other regions have failed to replicate the technological might—and wealth—of the world's high-tech capital. But it's not for lack of trying. Some thought the trick was to invest tax dollars in startups. The state of Illinois, for example, invested $12.8 million in 76 companies between 1985 and 1993 before abandoning the practice because of budget constraints and limited success. Others put their efforts into infrastructure—the state of North Carolina and local counties spent $35 million on facilities for Research Triangle Park.

Seattle

Microsoft money fuels startups

And then there has been the research-and-development approach. Singapore, for example, plans to spend $4 billion over the next five years on R&D. Heck, companies in New Jersey and Texas even hired Frederick Terman, the Stanford professor who stressed entrepreneurialism and was dubbed "the father of Silicon Valley," to recreate the original.

IPO POWER. But no region has come close. Despite all the efforts elsewhere, Silicon Valley stands skyscrapers above the rest. The numbers tell the tale: The Valley claims 11% of all tech jobs in the U.S., while representing just 1% of the population. And 20% of the globe's 100 largest tech firms are housed there.



North Carolina Research Triangle Park

Little to show for government subsidies

As for the money rolling into techdom, Silicon Valley cleans

ILLUSTRATIONS BY LOU BEACH

[redacted]

up. According to a 1996 study of 11 high-tech centers, including Boston, Austin, Tex., Raleigh-Durham, N. C., and Seattle, the Valley boasted 75 out of 161 initial public offerings for all 11 areas. The Valley's take: $2.9 billion, nearly half of the total $6 billion raised in the IPOs. "Everything is kind of dwarfed by Silicon Valley," says John P. Whaley, a partner at Minneapolis-based Norwest Venture Capital.

FALLING FLAT. Why are other regions trying to measure up? In a word: Money. Today, high-tech is a major economic driver—not only in sales of computers, software and semiconductors, but because it's manned by high-paid knowledge workers. Per-capita income in the San Francisco Bay area, for example, is $32,548 vs. the national average of $24,324. For American and foreign governments, that's attractive: There are more taxes to collect and none of the nasty waste of the steel or auto industries. "I get 500 visitors a year asking how the Valley works," says William Miller, a management professor at Stanford University.

The effort, however, is too often misplaced. Most attempts to build a high-tech presence fall to local governments, which can offer tax incentives or small investments but have no hand in inventing or commercializing technology. Research Triangle Park, for example, offers companies about one-third off their property taxes, amounting to some $12 million a year. That has helped attract a solid community of researchers from big-name companies based elsewhere, notably tech giants IBM and Cisco Systems and Glaxo Wellcome and Monsanto in pharmaceuticals. But entrepreneurs can't be bought with slightly lower real estate taxes: Local startups—with a few exceptions, such as SAS Software—are rare. "Research Triangle has looked promising for 10 years and it still hasn't panned out quite yet," says Richard D. Frisbie, managing partner at Battery Ventures in Wellesley, Mass.

Even private efforts to clone the Valley have fallen flat. Terman, the father of Silicon Valley, was hired in the 1960s to recreate the magic in New Jersey and Texas. He focused on establishing strong research institutions, like Stanford, that could provide a petri dish for bright ideas. But Terman was hired by large organizations, including Bell Labs

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CLOSE-UP / TAIWAN

Taiwan's New Grail: Innovation

LI SET OUT TO BUILD A NEW VERSION OF STANFORD UNIVERSITY

It looked like the coming of age for Taiwan's tech industry. In 1995, the country's Acer Inc. introduced a series of PCs that stood in stark contrast to the typical boxy, beige computers. Sleek and stylish, they came in slate black and emerald green. Sales shot up 80% in the U. S., its most important market.

But Acer, like Taiwan, is just getting the hang of innovation. As the company's emphasis on form beyond function was imitated last year by Hewlett-Packard, Sony, and Toshiba, Acer tumbled to the 10th-largest U. S. PC vendor, from No. 7 in 1995. Other Taiwanese firms want to avoid Acer's missteps, but the country's government thinks the lesson is clear: The island's companies need to develop the creative gene, and fast. "We can't enjoy success forever if we are just a good, fast follower," says Steve Hsieh, former director general of Hsinchu Science-based Industrial Park. "The next stage is to develop our own technology through research."

The Taiwanese government is trying to do just that. To foster more innovation, Taiwan is offering tax breaks and grants to push up national research spending from 1.8% today to 2.5% of gross domestic product by 2000.

Critical to the effort will be Hsinchu itself, a sprawling 1,430-acre technopark overflowing with electronics companies. Since its founding 17 years ago, Hsinchu has become the heart of Taiwan's technology industry, boasting 221 companies with 60,400 employees and revenues of some $12 billion. That has helped to drive GDP growth to an annual average of 6.3% in the past five years.

The park's origins date back to 1973 when K. T. Li, then minister without portfolio, set out to build Taiwan's version of Stanford University. He used government money to set up the Industrial Technology Research Institute (ITRI) with the mission of developing hardware and semiconductor technologies that could fuel startups. "I was very interested in the association of [Stanford] with the tech industry there," Li says. "We thought this could work in Taiwan."

STEEP PRICE. It has. Located in Hsinchu, ITRI has been responsible for some of Taiwan's most successful companies, including United Microelectronics Corp., now a $1 billion semiconductor manufacturer. Success hasn't come cheap, though. Taiwan pays annual subsidies of $420 million for ITRI and its sister institute for software research.

Some are skeptical that the government activism that helped build Hsinchu can now spur innovation nationwide. Given their success in manufacturing, a lot of companies are reluctant to spend heavily on research and development. "They are willing to spend money on improving production capacity, but not on R&D," says Chitung Liu, electronics analyst with SBC Warburg in Taipei. That formula has worked well so far, but competition from neighbors such as Malaysia and China could make that attitude as obsolete as yesterday's PC.

By Jonathan Moore
in Hsinchu, Taiwan

and Texas Instruments Inc., and few company men were willing to chance a startup. "He failed, in part, because he overestimated the importance of academia and in part because he was hired by large companies with no entrepreneurial traditions," says Stuart W. Leslie, a professor of history at Johns Hopkins University, who recently completed a study on Terman's efforts.

CRITICAL MASS. Fostering an entrepreneurial spirit is key to the growth of any tech region. Unfortunately, it's not something that can be taught overnight. In the Valley, Terman's teachings in the 1930s helped launch Hewlett-Packard Co. in 1939. But it was decades before entrepreneurial-minded engineers would leave the computer giant for their own startups. Rolm Corp. was one of the first, and it wasn't launched until 1969 by M. Kenneth Oshman and three HP colleagues. What followed were another dozen HP offspring, including Apple Computer Inc. in 1977. "It takes time for an area to develop the infrastructure for startups," says Ted H. McCourtney, general partner at Venrock Associates, a New York-based venture capital firm. "Silicon Valley has a head start."

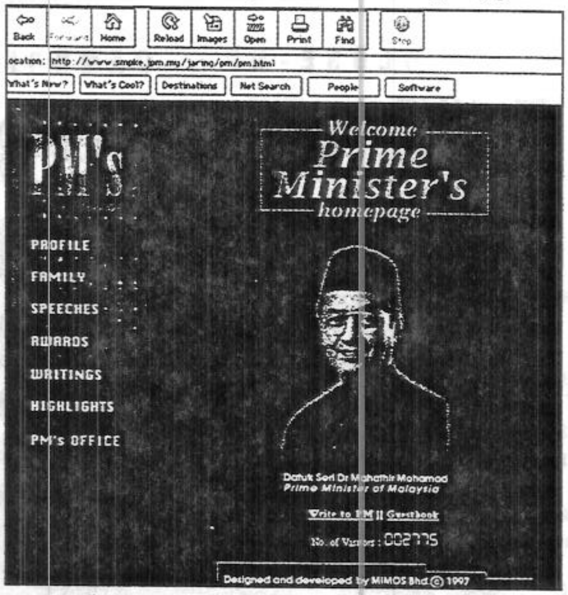
That counts for a lot. Today, the Valley has critical mass—in brainpower, in ancillary businesses such as components suppliers, and in the all-important financial backers. The economic advantages can be self-perpetuating, creating what some economists call "increasing returns." With so many tech players in one place, things work better—suppliers and customers can meet faster, info flows more quickly, new ventures are easier to launch. Success becomes a gravitational force, pulling in more people, money, and technology. "The existence of one industry center prevents the emergence of another center," says W. Brian Arthur, an economist at the Santa Fe Institute.

Does this mean other regions can't be big beneficiaries of the tech boom? Not at all. The industry added 240,000 jobs last year to a total of 4.3 million, thanks to big gains in Texas, New York, and Illinois, as well as California, according to the American Electronics Assn.

But other tech centers would do well to focus on areas that complement the Valley rather than come up against it. Boston ran into difficulties when local companies pushed minicomputers in the face of the PC revolution, but its strong university base has fueled recent successes in niches such as Internet security and data communications. Gateway 2000 Inc. turned North Sioux City, S. D., into a tech hotbed by using its low-cost

CLOSE-UP / MALAYSIA

Amid the Rubber Trees, A Multimedia Super Corridor?



MAHATHIR WANTS TO BUILD A TROPICAL SILICON VALLEY

Plans don't get much more audacious than the one to build a Multimedia Super Corridor in Malaysia. Consider this: Government officials need to scrounge up $40 billion in a country where the per capita income is just $4,200. They must encourage the birth of tech startups in a land where computer literacy and entrepreneurs are scarce. And if that weren't enough, they must lure global electronics companies, so that the result is a hothouse of technological activity—a sort of tropical Silicon Valley.

Sound a tad over the top? Not when you consider it is backed by Malaysian Prime Minister Mahathir Mohamad. When the physician-turned-politician took power 16 years ago, the country's economy pivoted on palm, rubber, and tin. Mahathir aggressively wooed Japanese and Western electronics makers, turning Malaysia into one of the world's largest producers of disk drives and other electronic components. Corporations such as Intel, Sony, and others have propelled economic growth to an annual average of more than 8% a year for the past decade.

But Malaysia's elite are worried that simply being an electronics assembler won't be enough in an age where ideas create wealth. So Mahathir wants to use new technologies, government money, and tech giants to create a site beyond Silicon Valley. The bait: heavy government spending to make the 465-square-mile corridor a leader in using high tech in real-world settings. Mahathir is backing his pitch with 10-year tax holidays, work permits for foreigners, and duty-free imports of capital equipment. "Malaysia offers the Multimedia Super Corridor as a huge test bed," he says, "for trying out not just the technology but also the way of life in the age of instant and unlimited information."

VALUES. The boldness of the vision has won key support. Mahathir has attracted a who's who of the digerati onto his advisory board, including Microsoft's William H. Gates III and IBM's Louis V. Gerstner Jr.

Still, enormous problems lie ahead. Computer-savvy workers are hard to find. And while it desires the fruits of digital technology, Malaysia's elite fear that the Internet will usher in corrosive Western values.

Mahathir's focus has always been on big, easily definable projects, such as construction of the world's tallest buildings in Kuala Lumpur. If the economy remains strong, he should be able to get the corridor built. Still, Mahathir faces one of the toughest challenges in his career—trying to impose from the top an economic order that relies on creative bubblings from below.

By Mark L. Clifford in Kuala Lumpur

workforce to make mail-order PCs. Overseas, Taiwan has taken advantage of its manufacturing expertise and low labor costs to carve out a niche in semiconductors and PCs. Ditto in New York, where the entertainment community used its expertise to build a respectable multimedia presence.

The one exception to all this: Seattle. The incredible might of resident Microsoft Corp., the No. 1 software maker, is drawing some of the brightest technical brains to the foggy Northwest. New York hedge fund manager Jeff Bezos migrated there to launch Web bookseller Amazon.com. Microsoft alumni, such as Progressive Networks Inc. CEO Rob Glaser, are using gains from their stock options to fund new companies. And Microsoft Chairman William H. Gates III is pairing up with local wireless pioneer Craig McCaw to launch Teledesic Corp., a $9 billion satellite system for worldwide data connections.

Does that mean Silicon Valley's lock on the tech industry is not absolute? You bet. Tectonic shifts in technology offer opportunities for new companies and regions to take the lead. Led by Digital Equipment Corp., Boston usurped New York's tech crown when minicomputers overwhelmed IBM's mainframes. "There has never been a region yet that has been able to sustain its advantage," says historian Leslie.

The trouble for the Valley's imitators is that the most significant tech shift of the 1990s looks to be the rise of the Internet. And thanks to Netscape's Clark and Andreessen, the Valley already has staked a big claim in cyberspace.

By Peter Elstrom in New York, with Paul M. Eng in Raleigh, N.C., Paul Judge in Boston, and Gary McWilliams in Houston

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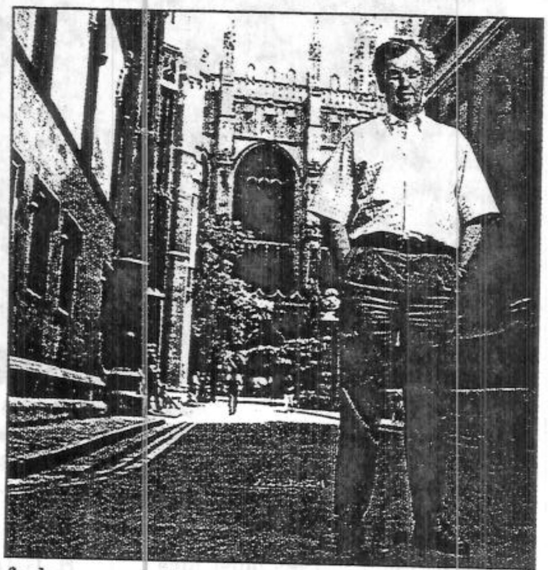
CLOSE-UP / CAMBRIDGE

The Hallowed Halls of Homegrown Tech

It was a triumphant moment. On July 18, Ionica PLC founder Nigel Playford and a few colleagues huddled around a computer screen, watching Ionica's stock on its first day of trading. Within minutes, investors had turned the six-year-old telephone company that competes with British Telecom into Cambridge's first business with a market capitalization of $1 billion. Playford broke out the bubbly. "Cambridge is one hell of a good place to set up a company," says the 41-year-old.

He's not the only one who feels that way. With a cluster of 1,200 technology companies, the ancient market town of Cambridge is becoming one of Europe's hottest high-tech centers. Although the average company has only 12 employees, on a collective basis they are credited with creating 35,000 jobs and pushing regional unemployment levels down to 3.5%, far below Britain's national average of 5.7%. "Cambridge is going to be one of the real engines for growth within Britain and Europe," says David Cleevely, managing director of Analysys, a Cambridge telecom consultancy.

It's already happening. Local companies are flourishing in a broad range of tech fields, including multimedia software, networking, and wireless communications. Many are spawned by ideas from Cambridge University. Stewart Lang, a computer-graphics researcher at the university with one startup success already, has launched Autostereo Systems to commercialize technology that makes an image on a screen look three-dimensional by showing it from 28 different angles. And Acorn Computer Group, launched by Cambridge graduate and super-entrepreneur Hermann Hauser, is one of the first designers of network computers, low-cost terminals that access the Net at high speeds.


GRAHAM TROTT

AUTOSTEREO SYSTEMS' LANG IS A CAMBRIDGE RESEARCHER

Already, Cambridge's homegrown tech companies boast combined annual revenues of $2.5 billion. Add sales from the global technology companies that have invested in the area, such as Nokia, and that figure doubles, to more than $5 billion. Xerox, Olivetti, Oracle, Hitachi, and the Stanford Research Institute have set up Cambridge "listening posts" to get access to research that comes from the university's labs.

NO IMITATIONS HERE. The most recent arrival is Microsoft Corp., which announced in June it would invest $80 million for a Cambridge research lab. Microsoft also is investing $16 million in a new venture-capital fund run by Hauser, who has started or co-founded about 25 companies in the Cambridge area, including semiconductor research company Advanced RISC Machines.

For all its tech success, though, Cambridge doesn't see itself as a Silicon Valley clone. "People sometimes use the expression 'Silicon Fen,'" to describe what's happening here, says Roger Needham, a Cambridge University computer scientist who was recruited to head Microsoft's new Cambridge lab. "But I object to that term. Cambridge doesn't imitate anything, thank you."

The university town also eschews Silicon Valley's more blatant materialism. Even some of Cambridge's most powerful players prefer to pedal to work each day on beat-up bicycles. Although Cambridge has become a hotbed for high-tech startups, that doesn't mean it's shedding its centuries-old traditions.

By Julia Flynn in Cambridge

CLONING THE BEST OF THE VALLEY

Much of what makes it great can be applied to companies of all stripes

The secret to Silicon Valley's success isn't in the silicon. It's not the speedy chips or the whizzy computer games or the intricate data-mining software that can sift complex databases to let us know that beer and diapers are the two items most often purchased together after 6 p.m. It's not even the omnipresent Web addresses that assault us on TV, in magazine ads, and on billboards. Rather, it's a way of doing business. Says venture capitalist L. John Doerr, of Kleiner Perkins Caufield & Byers: "It's a network, as opposed to a hierarchy."

Silicon Valley is setting a new standard for the way all businesses—not just high-tech companies—are run. With their flatter, more democratic organizations, giant talent pools, enormous web of interlocking relationships among companies, super speed, and can-do culture—especially the can-do culture—Valley firms are changing the rules of management.

But not enough. Elements of the Valley have been copied, but the place has not been cloned, gene for gene, anywhere in the world. And despite the corporate rhetoric and modest changes—fewer levels of management, shorter product cycles, even casual dress—the business world at large still doesn't get it. Says Intel Corp. CEO Andrew S. Grove: "People talk the talk. But when I go to the airport and see two dozen Gulfstreams, I don't know if companies have really figured it out."

They haven't. So here's a short list to help.

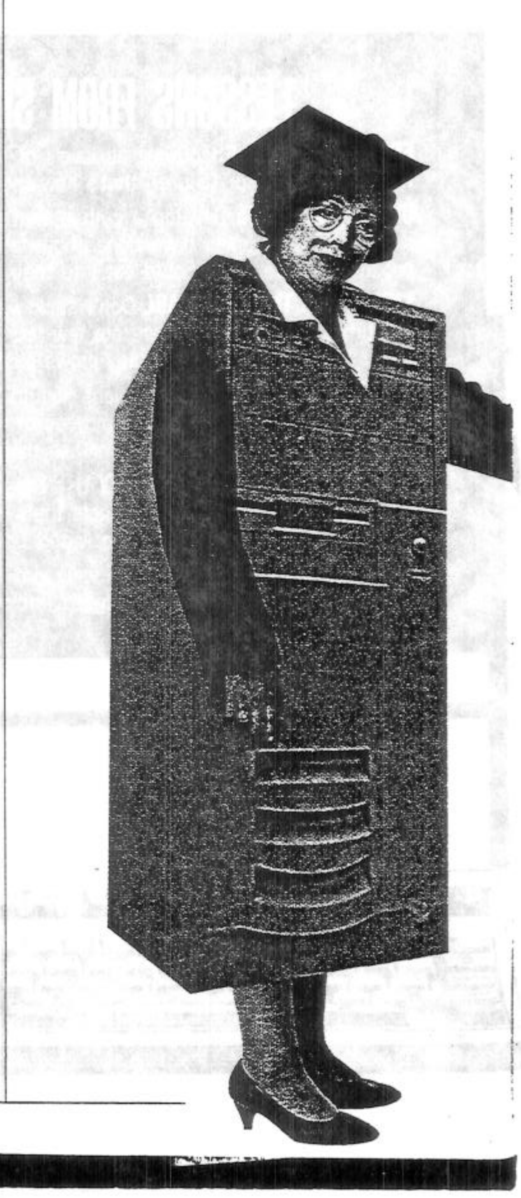
Failure is O.K.—seriously. Reward those who take risks, and don't penalize those who take a chance and fail. In other parts of the world, business flops and dead-end projects are stigmas. Careers screech to a halt. That makes managers afraid to take a gamble. It's not that way in the Valley, and not just for twentysomething entrepreneurs.

Push all levels of management to try new ideas. "The tolerance of failure is an intensely positive thing that people can learn from and apply," says Larry Keeley, president of Doblin Group, a consulting firm. That's why venture capitalists don't mind backing entrepreneurs who have had a couple of flops. Just ask Nolan K. Bushnell: He's started more than 20 companies, including gamemaker Atari Corp. More than half of his ventures have been disappointments. Says Jean-Louis Gassée, founder of computer startup Be Inc.: "It's hard to learn when you succeed."

Let ideas incubate. Valley companies excel at the early, often muddy stages of a business. This is partly because of the freedom-to-fail culture and a willingness to take greater risks when ideas are still unfolding. The key is to give the ideas breathing room. Don't require a 20-page business plan and detailed market research for every interesting notion. The laptop computer market would never have come about if someone waited for the market research suggesting that consumers want mobile computers. "This is a place that grows out of the rubble of the old innovations," says Paul Saffo, of the Institute for the Future.

Learn to live with creative chaos. Silicon Valley isn't just about speed and shortening product cycles. It's about developing a culture that can adjust quickly to change and chaotic environments. That means teamwork, coordination, minimal bureaucracy, and authority pushed down into the ranks. Indeed, the odd thing about Silicon Valley is that people are fiercely individualistic and yet quick to collaborate, share ideas over E-mail—anything to get the job done faster.

Be your own toughest competitor. Silicon Valley is an environment so accustomed to fierce competition that companies hunt for their own soft underbelly. That means coming up with better products that kill off your existing ones—a practice known as "eating your young." Says Alan F. Shugart, chairman of disk



LOU BEACH

BENCHMARK *There are steps you can take to foster a flourishing environment, but the business world at large still hasn't caught on*

drive giant Seagate Technology Inc.: "Sometimes I think we'll see the day when you introduce a product in the morning and announce its end of life at the end of the day."

Don't stick with your starters too long. This lesson has been learned the hard way. Not every entrepreneur does everything well. The characteristics needed for a startup—zeal, unwavering belief in your mission, and perfectionism—can hurt more mature companies. In the Valley, you can count on one hand the founders still running their billion-dollar babies. So when a company or a business unit grows to a significant size—say around $1 billion—get seasoned help.

Spread the wealth broadly. Put in place compensation systems that reward achievements—for all employees, not just those at the top. The Valley's liberal stock options and vesting programs have become the reason why its employees work at Net speed. So stoke the money machine. Making people rich, fast, is what keeps the food chain filled. This creates a natural pool of managers, or so-called angels, ready to use their bankroll to fund the next great idea. Says James G. Treybig, founder of Tandem Computers Inc.: "This is an awesome machine to create new companies."

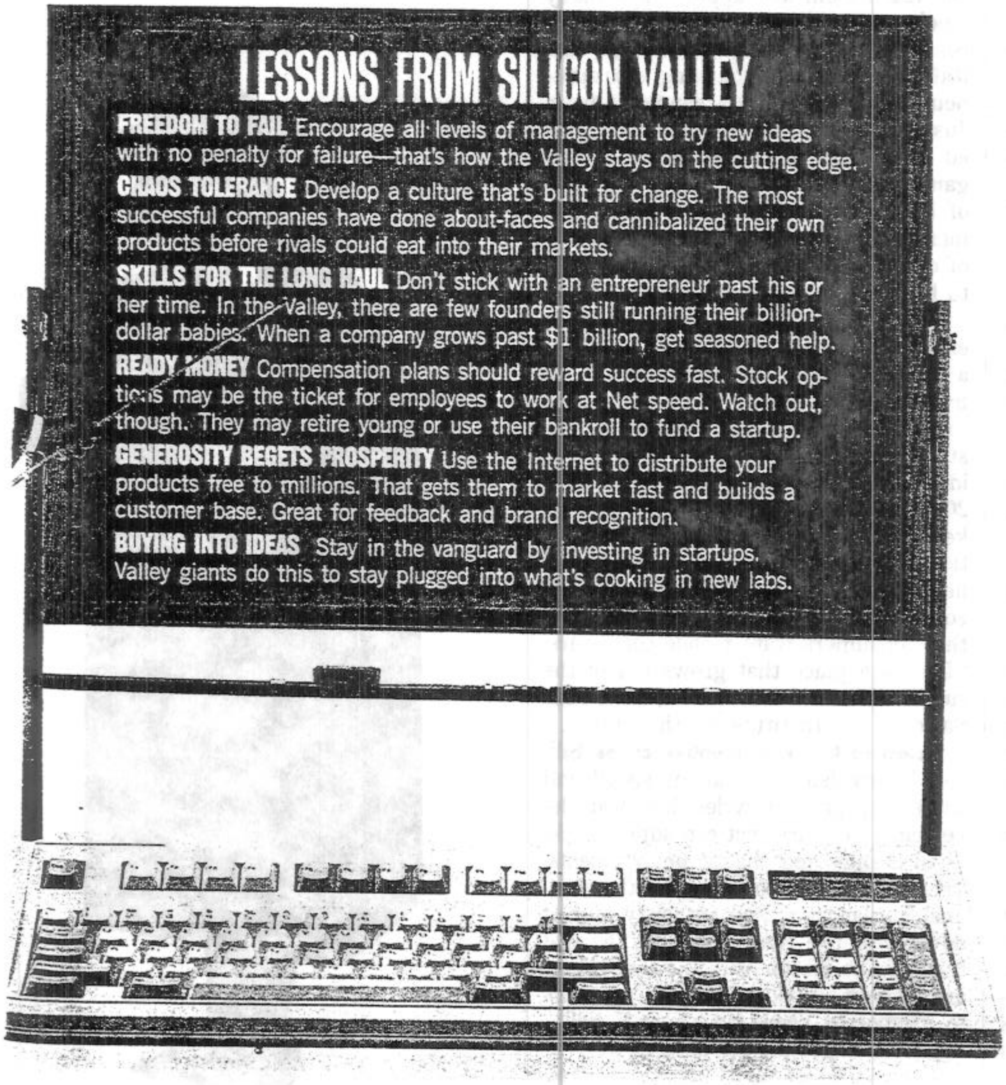
Grab market share at all costs. Even if it means giving your product away. And in the process, change the rules of the game. That's what Netscape did. Use the Internet to cut out the middleman and go direct around the world. It's great for building market share and brand recognition. This also tightens relationships with customers and changes the balance of power in the world of distribution. Net media and Web search engine companies such as CNET Inc. and Excite are doing just that—much to the frustration of traditional media companies. By jumping on the Net early and keeping their services free, they've captured market share and established well-known brand names on the Web.

Stay at the cutting edge by investing in startups. The best way to get innovation may be to buy it. Giants like Cisco Systems Inc., which has bought or invested in 34 startups in the past three years, do this to stay plugged into what's brewing in the labs of new companies. Chip king Intel has a $500 million investment fund it uses to seed startups, particularly in the Net and content areas.

So set up a venture capital fund and bring in your own dealmakers to connect with small, fast-moving companies in your industry. Later, you could either make a killing when they go public, get a jump on some new technology, or resell their product, lowering research and development costs.

In the end it comes down to that ill-defined, yet critical ingredient: culture. You can change it but not by picking just one or two items from this list. You have to change the way you do business. And remember the first item: Failure is O. K.

By Ira Sager in New York, with bureau reports



LESSONS FROM SILICON VALLEY

FREEDOM TO FAIL Encourage all levels of management to try new ideas with no penalty for failure—that's how the Valley stays on the cutting edge.

CHAOS TOLERANCE Develop a culture that's built for change. The most successful companies have done about-faces and cannibalized their own products before rivals could eat into their markets.

SKILLS FOR THE LONG HAUL Don't stick with an entrepreneur past his or her time. In the Valley, there are few founders still running their billion-dollar babies. When a company grows past $1 billion, get seasoned help.

READY MONEY Compensation plans should reward success fast. Stock options may be the ticket for employees to work at Net speed. Watch out, though. They may retire young or use their bankroll to fund a startup.

GENEROSITY BEGETS PROSPERITY Use the Internet to distribute your products free to millions. That gets them to market fast and builds a customer base. Great for feedback and brand recognition.

BUYING INTO IDEAS Stay in the vanguard by investing in startups. Valley giants do this to stay plugged into what's cooking in new labs.

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WHARTON REPROGRAPHICS

Fox Broadcasting Company

On May 6, 1986, Jamie Kellner, president and chief operating officer of Fox Broadcasting Company (FBC) presided at a long-awaited press conference. Flanked by Fox Inc.'s chairman, Barry Diller and comedienne Joan Rivers, Kellner announced his plans for a "satellite-delivered national program service for independent stations"[1] to begin broadcasting in fall 1986. Diller stated that $100 million had been earmarked for programming expenditures for FBC's first year on the air, with another $40 million dedicated to advertising and promotion. He added that FBC was prepared to lose up to $50 million during its first year of broadcasting, and admitted that it would take at least five years and $150 million in start-up losses to turn an operating profit. Ms. Rivers's nightly talk show was to be the first program on the schedule and line-ups for two hours on Saturday and three hours on Sunday would premiere in March 1987.

This announcement marked yet another step in what many believed was international media magnate Rupert Murdoch's plan to create a fourth television network in the United States. During 1985, his Australian holding company, News Corporation, Ltd., purchased the film and television production company, Twentieth Century-Fox, for $575 million, and six television stations formerly owned by Metromedia for $1.65 billion.

The more than $2 billion of debt used to finance these and other purchases did, however, put the continued financial health of Murdoch's company in question. With the growth of network television advertising slowing, and broadcast television's share of viewers declining, analysts wondered if this was the time, and if FBC was the company, to establish a fourth television network.

The History of Broadcast Television

The broadcast television industry encompassed four groups of players: advertisers, whose expenditures supported commercial broadcasting, producers who created original programs,

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This case was prepared by Jacquelyn Edmonds and revised by Research Associate Scott Bradford Garell under the supervision of Professor Pankaj Ghemawat as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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[1] *Broadcasting* (May 12, 1986): 48, 50.

networks and syndicators who distributed them, and local stations who broadcast them (see **Exhibit 1**).

Advertisers

In the early days of television, advertisers assumed the same role that they had in the radio industry: they sponsored and frequently produced programs. Later, disintermediation occurred, for two reasons: first, as programming grew more sophisticated, its costs soared; an average half-hour comedy program cost approximately $50,000 in the early 1960s, $150,000 by the mid-1970s, and $350,000 by 1985. Second, as television became the preferred advertising medium, sponsors began to want the benefits of exposing their products on all networks and across all time periods instead of being restricted to the shows that they had underwritten.

By the early 1960s, the networks took responsibility for selecting and sponsoring programming away from advertisers. Sales of commercial time in 10 - 60 second blocks made television affordable for many small advertisers that had previously been shut out of the market. An increasing number of companies tried to reach a national audience on a relatively small number of stations. The most desirable stations—those with the largest audiences—were usually controlled by a network.

Producers

After advertisers stopped creating regularly scheduled programs, movie studios took over most television production to replace the revenues that they had lost in 1950 when, after an antitrust investigation, the Department of Justice forced the eight largest studios (the "majors") to divest their movie theaters. Television was an additional threat because it might erode theater audiences; the movie studios turned it into a profitable opportunity by producing weekly programs and by selling older films to the networks and local stations.

By shifting production to the studios, television networks were able to lower their costs of creating new programs. The movie companies had the physical infrastructure and relationships that the networks lacked in their early days, lowering their variable costs. The studios worked closely with the networks to develop series that would be accepted for broadcast. The networks had the right to refuse fully developed sample episodes (pilots) and to cancel the least popular series already on the air. Producers had to assume the losses from rejected shows.

After a series completed its run on a network, its reruns could be "syndicated" or sold to local stations. Networks often lowered their programming expenditures by promising producers a percentage of a show's syndication revenues instead of paying its full production cost. Until 1970, when the Federal Communications Commission (FCC) limited this practice, networks could also share substantially in the syndication profits. In the 1980s, networks were each allowed to "own" three hours per week of their prime-time, non-news programming.

Prices for new series were negotiated between the producer and the network. On average, networks paid producers 80% - 90% of total production costs. Networks typically paid for 6 or 13 episodes of a new show at one time, while renewed series were contracted for 22 - 26 episodes. Producers' profits were, therefore, delayed until syndication. Usually a show required at least 60 episodes, the equivalent of a three-year network run, to be eligible for syndication. During the 1970s, about 15% of new series generated enough episodes to be syndicated.

Because of the costs and risks of production, many producers sold the rights to their shows to specialized distribution companies, or "syndicators," for a cash advance and a percentage of syndication revenues. Syndicates took the responsibility for selling the reruns to local stations. Demand for reruns was high, but few programs had enough episodes to be syndicated to local stations for daily broadcast. Therefore prices per episode were quite high: very popular shows sold for more than $100,000 per episode by the mid-1970s.[2] The price of a series varied with the size and competitiveness in each local market. A station in one of the top three markets (New York, Los Angeles and Chicago) could pay up to 100 times as much as a station in one of the ten smallest markets for the same show.

Syndicators retained 35% - 40% of rerun revenues to cover sales and distribution costs and professional fees. The remaining revenues went to the producers and to the stars of the series. Producers had to recoup at least 10% - 20% of their original production costs from the syndication sales price; the rest fed into operating profit. By the 1970s, major studios derived over half of their total revenues from television; this figure included the sale and syndication of network series, made-for-television movies and archived films. Many independent producers were attracted to the television industry by then.

Networks

Television networks, as national distributors of first-run programming to local stations, linked national advertisers, program producers and affiliated stations. The FCC defined a network to be any entity that offered at least 15 hours of regularly-scheduled programming each week to at least 25 affiliated stations in ten or more states.

Television networks evolved from the radio networks of the 1930s. The first television networks, NBC, ABC, CBS and DuMont, were divisions of major radio networks or subsidiaries of television and radio set manufacturers. As in the radio industry, economies of scale in broadcasting and advertising favored centralized sales and distribution companies. Networks offered programs to local affiliates that the latter could not underwrite individually. And by purchasing airtime from a network, advertisers could deliver their messages simultaneously to the entire nation instead of buying time piecemeal from hundreds of local stations. The FCC, recognizing these latent economies of scale, sought to regulate the networks to prevent superconcentration of the information flowing to the public. Three of the areas in which the FCC had the biggest impact on the broadcast television industry are described below.

First, it was the FCC's job to assign positions on the VHF (very high frequency) and UHF (ultra high frequency) television bands to local broadcast stations. Television sets were originally capable of receiving only higher-powered VHF channels (2 - 13). Because of interference, even the largest local markets could sustain only seven of these 12 VHF channels. In the 1940s, when the FCC began assigning VHF frequencies, the existing radio networks were quickly able to secure attractive stations in highly populated areas; which turned out to be the most profitable part of network operations. Once the VHF channels were exhausted, the FCC began to allocate 70 lower-powered UHF channels (14 - 83) in 1952. It was another 12 years before the FCC mandated that all sets be manufactured to receive these channels. The majority of educational stations and independents (stations unaffiliated with the networks) were relegated to the UHF band.

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[2] The $100,000 reflected the total across all markets.

Second, the FCC controlled the development of non-broadcast services. It was trying to preserve free viewer access to television programs; therefore, until the late 1970s, it limited the geographic areas that could be served by cable television. It also prevented cable systems from importing signals from broadcast stations outside its immediate geographic area and severely restricted "pay" television.

Third, the FCC also governed the cost of connecting the stations in a network. During television's early years, an AT&T relay system transmitted broadcasts. AT&T set up a pricing system under which a full day of regularly-scheduled service used by the largest radio and television networks cost only slightly more than one hour of service (approximately $9,000 in 1980). Not until the early 1980s did the FCC allow competitors into transmission or take steps to linearize AT&T's price structure.

Constraints on competing technologies, a lack of station availability, and expensive transmission set the stage for a three-network system composed of ABC, CBS, and NBC competing for programs, viewers, advertisers and affiliates. Their principal strategy was counter-programming: the practice of scheduling shows against each other that would appeal to different audiences. Despite this strategy, each was quick to imitate their competitors' most successful shows.

For most of the early decades of the television industry, CBS led in ratings, income and prestige, NBC fell in the middle and ABC, the last of the three to be started up, trailed. The status quo began to shift in the late 1960s as ABC began to reorganize its internal structure, rebuild its programming schedule and increase its ratings; and it led the others through the late 1970s (see **Exhibit 2**). CBS, which attracted more mature audiences because of its strong reputation in news, reacted by canceling some of its still successful series in an effort to garner a larger, younger audience similar to ABC's and regained the top spot in 1980. NBC, now in third place, embarked upon the kind of repositioning that ABC had undergone several years earlier. It began sticking with low-rated series to allow them to improve their ratings, a strategy that began to pay off during the 1984 - 1985 season when it became the highest-rated network.

Several other networks were launched, without success, while ABC, CBS and NBC grew. The DuMont network got its start around the same time as ABC. Its founder, Allen B. DuMont, was an engineer who had worked on television technology at RCA and left to form his own electronics manufacturing company. He used the profits from the manufacturing operation to launch the DuMont network. In the early 1950s, DuMont had 80 full-time affiliates and 175 part-time station subscribers; it lacked, however, the radio broadcast experience of the other networks and had fewer programming resources. While DuMont tried to finance the conversion of the industry to color television, ABC obtained additional cash through a merger which strengthened its position at DuMont's expense by improving its programs and attracting some of DuMont's stars, programs and affiliates. DuMont ceased broadcasting in 1955; the stations that it owned formed Metromedia, which was the largest chain of independents for many years. Later efforts by the United Network (1966 - 1967) and Paramount Pictures (1977) to launch a fourth television network failed because of lack of advertiser support and the high cost of telephone lines for transcontinental transmission.

For years, networks, like station owners, were able to own and operate up to five VHF and two UHF stations that reached no more than 25% of the nation's population. Station ownership was very important to the networks; it was believed that earnings from profitable stations provided a significant subsidy for other operations. The limit on station ownership was raised to 12 in the 1980s, but the reach limitation remained the same, effectively freezing further network acquisitions.

Stations

Because of the limitations of the electromagnetic spectrum, the importance of television as a communications medium, and its natural tendency toward concentration, the FCC decided to license local stations. Applicants had to submit plans that were judged on their commitment to public affairs and local programming. Until the early 1980s, successful applicants received a three-year license, although financial statements and program schedules were reviewed annually. Updated plans had to be submitted every three years for renewal. License renewal could be challenged by the public, usually on the basis of biases in local programming, though very few licenses were ever cancelled.

Two groups of television stations emerged: affiliates and independents. Affiliates carried, in part, the programs of their chosen network; independent stations supplied their own programming. Network affiliation contracts were restricted to two years and were non-exclusive; affiliates might broadcast programs from other networks. On the other hand, if an affiliate rejected a network series, the network was free to offer it to another station in that local broadcast area. Rejections occurred rarely because it was much cheaper to accept network programs than to purchase non-network programming. However, affiliates occasionally did preempt network programs to broadcast shows of local interest.

Because of the popularity of their shows, affiliates were historically more profitable than independents; their operating margins averaged 36% and 30%, respectively. The cost structures of affiliates and independents differed considerably. Affiliates invested heavily in production facilities and equipment to create the local news and feature programs that generated much of their profits. Independents spent most of their revenues on syndicated series and movies to fill out their schedules.

Affiliates were paid to carry their network's programs. Compensation was based on a formula negotiated between the network and individual stations; typically, it was equivalent to 30% - 40% of the value of the spot market rate for the advertising time that the network took away from the station—usually six minutes per hour during prime time. (Details on network, spot and local advertising rates, and how they were calculated, are given in the **Appendix**). In addition to compensation from its network, affiliates retained three minutes of commercial time each hour to sell to local or national advertisers or for public service announcements. Networks were prohibited from acting as brokers between their affiliated stations and national advertisers in the sale of locally-reserved commercial time.

Until the early 1980s, independent stations were generally considered to be less valuable properties than affiliates: they had difficulty filling their schedules because of the high prices of reruns; and their other offerings comprised older movies, locally-produced children's or information shows, sporting events, religious programs and advertising-provided specials. Since most independents were UHF stations that could not reach large audiences, they were overlooked by national advertisers, however, their competitive positions were improved by regulatory and other changes during the 1970s and 1980s.

Broadcast Television: 1975 - 1986

Changes in the FCC's regulatory policies, antitrust actions taken by the Department of Justice against the three networks and corporate mergers significantly affected broadcast television during the late 1970s and early 1980s.

Cable Expansion

During the late 1960s, cable television operators began to pressure the FCC to expand their operations. They were originally confined to rural areas, where they erected master antennae to amplify distant television signals delivered to subscribers' homes via coaxial cable. Basic cable service comprised local and distant broadcast stations and advertiser-supported channels (like MTV and the Cable News Network). Subscribers paid an additional fee for commercial-free, or "premium" channels such as Home Box Office. Operators received franchises from state or local governments to install their cables and leased utility poles to support their lines.

Cable operators sued the FCC over its restrictions on their services: including signal carriage rules, that required them to carry broadcasts from local television stations but limited the importation of distant stations; access rules that forced operators to make channels and production facilities available for public, political and educational programs; and "anti-siphoning" rules that prevented "pay cable" from carrying any series programs, movies over two years old, or sporting events already aired on network television.[3] They won their case in the Supreme Court in 1978. After these regulations were struck down the cable television industry grew rapidly (see **Exhibit** 3). Although the FCC permitted the three networks to own cable programming services, it prohibited them from owning cable systems (the distribution part of the business).

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[3] The anti-siphoning rule was meant to prevent subscription services from dominating free broadcasts in local markets.

Satellite Transmission

Local television stations, networks and cable operators had made tremendous investments in landlines, relay stations, amplifiers, switches and receivers to transmit television signals. The ability to finance these investments was, in fact, one of the criteria used by cable regulators and the FCC to allocate licenses. The advent of commercial satellites eliminated the need for much of this infrastructure and networks and program originators could now rent transponders (relay devices on communications satellites) on a regular or occasional bases. In 1985, an hour of prime transponder time cost approximately $400, down from $600 a year earlier. Rental costs were expected to stabilize in the late 1980s, as a slowdown in satellite launches diminished the oversupply of transponders. The investment in transmission was now limited to purchasing or leasing transponders, and buying earth station transmitters and receivers (which, by 1985, sold for less than $50,000). By 1985, most network broadcasts were sent via satellite.

Satellites let independent stations and cable networks match some of the advantages of the three broadcast networks; they could secure national distribution instead of being restricted to a local market; and they could insert commercials broadcast to all viewers, making their programs more attractive to national advertisers. A few independent stations—WTBS (Atlanta), WGN (Chicago) and WOR and WPIX (both of New York)—had combined with cable companies to create "superstations" whose programs were carried via satellite to local cable operators around the country. The largest of these, WTBS, reached 36.1 million households in 1985.

Producers and syndicators also lowered their costs through satellite distribution. By beaming programs directly, distributors eliminated the expense of duplicating and transporting hundreds of videotapes to and from local stations. And by using satellites, producers were able to create up-to-the-minute programming that had been the preserve of the networks. This enabled the delivery of special interest news shows, such as *Entertainment Tonight* or the *Nightly Business Report*, as well as topical information or entertainment specials.

Station Growth

The number of broadcast television stations began to grow dramatically in the late 1970s, with independent stations leading the way: the number of independents increased from 80 in 1975 to 121 in 1980, and to 241 by 1985. Station values increased as well. Before 1980, most stations were valued at 8 - 10 times their cash flow. However, in the early 1980s, many group broadcasters began to buy and sell stations, driving multiples up to 17 - 20 times cash flow. The increased value for independents was partially fueled by Reagan administration legislation that discontinued rules requiring licensees to hold stations for three years and thus made them more attractive to investors. In 1984, 132 stations were sold (up from 38 in 1977), and the average television station was valued at $40 million. In the same year, a record was set when the Tribune Co. purchased the VHF independent KTLA in Los Angeles for $510 million.

The larger number of independent stations and growing cable penetration, which enabled homes wired for cable to receive higher quality broadcasts aired on UHF independents, increased the demand for programming. New production companies as well as established studios escalated their program introductions. A large proportion of these offerings were first-run syndications—programs created specially for the syndication market without prior network exposure. The number of first-run daily programs rose almost 40% between 1980 and 1985; concurrently, the fraction of first-run network shows accepted for reruns fell from 15% to about 8%. Many non-network first-run shows were bartered to stations: syndicators received several minutes of advertising time to sell nationally, in addition to cash payments. With syndicators selling advertising nationally and "simulcasting" via satellite, the distinction between the largest syndicators and the networks began to blur.

Network Restructuring

Despite the growth of cable television, satellite transmission, and independent stations, the network television triopoly initially continued to pass through cost increases to advertisers (see **Exhibit 4**). According to author Ken Auletta, during the 1970s and early 1980s "almost everything about the networks suggested comfort, from the silver limousines on demand, to the chartered airplanes, to the first-class air travel provided even technicians, to the mountains of caviar dispensed at network-sponsored conventions....there was also the serenity of knowing that even the third place network made money."[4]

However, by the mid-1980s, the future of network television was being questioned by many analysts. The three networks' share of the prime-time television audience had declined from 85% in 1980 to 73% in 1985. This erosion was attributed to cable television (which had 8% of the prime time audience in 1985) and to the growing use of videocassette recorders (VCRs)—VCR penetration surpassed 40% in many urban areas. Advertisers were particularly concerned about VCR owners' habits of "time-shifting" and "zapping." Time-shifting was the practice of taping shows for later viewing that nullified the audience-building effects of the carefully structured network schedules, and allowed viewers to "zap," or fast-forward past commercials. Though no comprehensive studies of these practices had been completed, advertisers were thought to be discounting the prices they were willing to pay for network time.

Partly as a result of these factors, network advertising revenues declined in 1985 for the first time since the early 1970s, falling 3% to $8.3 billion. Consumer products companies, the largest users of television advertising, began to complain about the high cost of network advertising and to switch their dollars to consumer and trade promotions, as well as to lower-priced independent stations and cable networks. Network substitutes also let advertisers target more specific audiences. To counter this trend, networks made 15 second commercials available for the 1986 prime time season as an alternative to the traditional 30 or 60 second spots. However, initial results indicated that advertisers were substituting the cheaper 15 second ads one-to-one for longer spots instead of using them to supplement existing advertising budgets.

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[4] Ken Auletta, *Three Blind Mice* (Random House, 1991): 25.

Starting in 1984, all three major networks were targets of takeover attempts. Capital Cities Communications, a major television station owner and publishing company, purchased ABC in 1985 for $3.5 billion. RCA, the parent company of NBC, was sold to General Electric for over $6 billion in the same year. Several companies, most notably Turner Broadcasting Systems, attempted to purchase a controlling interest in CBS. CBS spent in excess of $1 billion, quadrupling its debt, to thwart these bids.

As a result, the networks came under increasing pressure to improve their profitability (see **Exhibits 5** and **6**). They focused on cutting back on programming, which cost each of them approximately $1 billion a year. ABC was under the most pressure, because of both Capital Cities' "lean" approach to running its businesses and the network's loss of ratings and advertising revenues during the 1985 - 1986 season. In the first 16 months of Capital Cities ownership, ABC dismissed 1,600 employees as part of its goal to trim its annual overhead from $500 million to $300 million. Its money-losing contracts with major sports leagues would be up for renegotiation in the late 1980s and renewal at comparable rates was unlikely. But ABC was still bound by agreements to pay $309 million to broadcast the 1988 Winter Olympics and $575 million for six years of major league baseball that expired in 1989.

CBS planned to eliminate over 1,000 jobs and sold its St. Louis television station, KMOX, for $122 million in order to repurchase its shares and stave off future takeover attempts. The company also planned to sell over $300 million in assets to help pay off its debt, which had risen to 69% of its total capitalization. In addition, it continued to consolidate its operations and aimed to hold expense growth below 4% in 1986. In September 1986, acting CEO Lawrence Tisch proclaimed that CBS was "50% overstaffed."[5]

The impact of General Electric's merger with RCA on NBC was still unclear in early 1986. NBC accounted for 30% of RCA's revenues and 44% of its operating profits in 1985. NBC was significantly less important to the combined companies, making up only 7% of the total revenues and operating profits of GE and RCA. Its ratings leadership and record profits in 1985 suggested that it might not respond like the other networks (see **Exhibit 7** for an estimate of NBC's financials in 1986).

News Corporation[6]

In 1952, 21-year-old Rupert Murdoch inherited control of the *Adelaide News* (in Australia) from his father, Sir Keith Murdoch. From that base, Murdoch increased his holdings in Australia and later began acquiring newspapers in the United Kingdom. While Murdoch was able to improve the performance of many newspapers through operating efficiencies, lean staffing, and hands-on management, many felt that the main reason his papers prospered was their sensationalized and often scandalous editorial content. In 1973, Murdoch moved into the United

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[5] Ibid, p. 241.

[6] Part of this section is drawn from Harvard Business School case 9-792-039, *Sky Television versus British Satellite Broadcasting*.

States with the acquisition of two troubled San Antonio, Texas, newspapers that he later combined into the profitable *San Antonio Express News.*

In the 1980s, Murdoch used debt to build News Corporation into the world's first global television, publishing, and entertainment empire. Debt financing was attractive because he did not want to dilute his 49% equity stake and was facilitated by liberal Australian accounting rules that allowed News Corporation to revalue its assets every three years and to treat its convertible securities as equity. By 1986, his holdings included over 100 newspapers and magazines around the world as well as what was perhaps the prototypical global television network (see **Exhibit** 8). Murdoch considered the 1985 acquisition of Twentieth Century-Fox Studios the key ingredient that enabled him to strengthen his company's global television capabilities:

> *A really integrated media company has to be in the production of entertainment.... You have got to have a foot in the creative process. Making movies [or TV shows] is part of that. I went into entertainment not to get into entertainment. It was part of a broad strategy to get into the media industry, the heart of the media industry. I know you really can't talk about one global economy, but there really is. There are certain things in common. Hollywood is still the magnet for most talent. Studios here still have the preeminent position. So if one owns a studio, it's a great opportunity.*[7]

Murdoch, aided by a corporate staff of three dozen, maintained tight control over News Corporation's operations. Each week, he received and personally reviewed reports on vital statistics—circulation, advertising pages, revenues, profits—of all his companies around the world. He had a reputation for being an opportunist who moved quickly, sometimes surprising even his top advisors. The purchase of Metromedia at a $200 - $300 million premium over the prevalent price-to-cashflow ratios for independent stations, was entirely his decision; he thought the premium was worth paying for a group of high-quality stations in major metropolitan markets. Murdoch, originally an Australian citizen, became an American in 1986 to sidestep FCC regulations that limited foreigners' stakes in U.S. broadcast stations to 20%.

Between 1984 and 1986, three major acquisitions—six Metromedia television stations for $1.65 billion (1985), Twentieth Century-Fox Film Corporation for $575 million (1985), and 14 magazines from Ziff-Davis Publishing for $350 million (1985)—helped triple News Corporation's assets to $5.6 billion. Over the same period, News Corporation more than doubled its revenues to $2.67 billion, more than quintupled net income to $172 million, and more than quadrupled total debt, to $2.5 billion. Servicing this debt was expected to cost News Corporation about $300 million per year, roughly twice the 1985 cash flow generated by the acquired businesses.[8]

Analysts also noted, however, several positive factors that would help News Corporation meet its debt service obligations; the Fox film studio, after losing $85 million in 1985, began to break even in 1986; the cash flow from Metromedia was expected to increase 10% - 15% from the 1985 figure of $95 million; and the cash flow from News Corporation's London newspaper operations was expected to increase $75 million, largely because of plant automation. Properties that could be auctioned off if necessary included several hundred million dollars of newspaper properties, a 50% holding of Ansett Airlines valued at around $300 million, $175 million of Reuter stock, and $60 million of stock in TNT Ltd., an Australian transportation company.

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[7] Alex Ben Block, *Outfoxed* (St. Martin's Press, 1991): 107-108.

[8] *Barron's* (December 8, 1986): 8-9, 38-43.

Fox Broadcasting Company

Amid changes in the television industry, several companies—including Viacom, Tribune and Lorimar—seemed to be using tapered integration strategies to prepare themselves to offer a full range of program services. But only Fox Broadcasting Company, a fully-owned subsidiary of News Corporation, had announced plans to do so. Immediately after News Corporation's acquisition of the six Metromedia television stations, Murdoch, acknowledging that he would have to do more than just operate the stations to justify the price he had paid, announced his intention to use them to challenge "existing networks."[9] This intention evolved into the concept of a new program service for independent stations that would resemble the networks in its national reach and simultaneous broadcast capabilities but would, in the words of Jamie Kellner, FBC's president, "Operate like a lean, aggressive syndication company and attempt to target a young, urban audience."

Management

Barry Diller, chairman of Fox Inc. (which included the studios, stations, and FBC), and Kellner, provided the leadership for the new network. Diller, who was 44 years old, had pioneered the development of made-for-television movies and mini-series as ABC's programming director, and became familiar with the challenges of building a fourth network during his ten-year tenure as chairman of Paramount Pictures. Paramount's 58-station network, which included the use of five Metromedia stations and covered 57% of the country, had failed in 1977 due to weak advertiser support. In 1984, Diller became chairman of the troubled Twentieth Century-Fox Studios. Since then, Diller, "a demanding, efficient executive with an eye for both talent and the bottom line," had cut costs and reorganized Fox's distribution, marketing, and production divisions.[10] Kellner, who was 40 years old, became FBC's first hire on February 1, 1986. He had 14 years of television syndication experience through previous management positions at CBS, Filmways and, most recently, as president of Orion's Entertainment Group.

Programming

Although Fox already produced several first-run shows for syndication, including *The $100,000 Pyramid*, *Solid Gold*, and *Dream Girl USA*, none of them were to be used on the new network. Instead, it would be launched on October 9, 1986 with a one-hour, Monday - Friday talk show at 11:00 PM featuring Joan Rivers. Diller felt that Rivers brought "a real sense of adventure and audacity to television,...a spirit [that] embodies the approach we [FBC] will continue to take in achieving our goals for the network."[11] In March 1987, FBC planned to begin airing two hours of comedies on Saturdays, and an hour-long adventure show followed by two hours of situation comedies on Sundays, each to be ordered in blocks of 22 episodes (see **Exhibit 9**). If all these plans were carried out, they would imply total annual production costs of $93.5 million. But according to FBC's president, Jamie Kellner, "We're going to roll out in a very slow year-by-year fashion, and then based only upon ratings success of the original programming."[12]

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[9] *Business Week* (May 20 1985): 104-108.

[10] Ibid, p. 107.

FBC intended to establish an "arm's-length" relationship with its sister company, Twentieth Century-Fox Studios. The network claimed that it would broadcast the best available programming regardless of source, and that it would pay market prices for programs purchased from Twentieth Century-Fox. Like other networks, FBC would foot 100% of the cost of producing programming (from Twentieth Century-Fox studios) but only 80% of the cost of programs from other sources. However, unlike established networks, FBC would not be restricted by FCC rules from sharing in syndication profits from programs its studio produced as long as it did not broadcast more than 15 hours of programming per week.

Some industry observers speculated that the potential for sharing syndication profits might lead FBC to source up to one-quarter of its programs from Twentieth Century-Fox Studios. Since only about one in twelve network shows survived long enough to be syndicated, perhaps one of the first 50 programs FBC aired might generate syndication profits. At an average profit margin of 40%, FBC might receive $20 - $40 million in profits per syndicated program. However, syndication profits would not be available for at least 3 - 5 years and would depend on the program's degree of success during its initial network run, its length, the number of episodes sold and the mix of syndication sales across independent, cable and foreign markets. Also, profits would be partially offset by losses from unsuccessful programs produced for FBC by Twentieth Century-Fox. Because of these uncertainties, FBC did not include any syndication profits in its original business plan. According to Kellner, "We expect the network to survive and succeed without any benefit from the [Twentieth Century-Fox] studios."

Distribution

The six television stations that FBC acquired in 1985 from Metromedia for $1.65 billion would anchor its distribution effort. These stations covered six of the top ten local markets (of a nationwide total of 212) and reached 21% of U.S. households (see **Exhibit 10**). In May 1986, FBC agreed to acquire a seventh station, a UHF outlet in Boston, for $28 million. This purchase would boost its national reach to 25%, the maximum allowed by the FCC. According to Kellner, FBC originally assumed that its programming "would have a neutral impact" on the performance of its owned and operated affiliates.

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[11] *Broadcasting* (May 12, 1986): 48, 50.

[12] *Broadcasting* (May 5, 1986): 36-37.

By August 1986, FBC had signed 92 affiliates covering over 80% of the country. The roster included an affiliate in each of the top 30 markets. Skeptics noted, however, that despite this broad potential, only 2.3% of the U.S. audience watched FBC's outlets during prime time. This limited share reflected FBC's focus on independents, most of which (about 75%) operated lower-powered UHF stations.

FBC's relationships with its affiliates mirrored those of established networks: it required a two-year commitment as well as adherence to uniform broadcasting and advertising policies. FBC planned to compensate affiliates with a percentage of its national advertising revenues. Estimates for annual compensation would approximate $9 million for late evening shows and $40 million for weekend prime time programs. In addition, affiliates would receive six 30-second commercial spots per hour for sale to local advertisers—double the current network allotment. Shows would be transmitted via satellite since FBC had secured transponder time at a cost of approximately $285 per hour.

Advertising

By the summer of 1986, FBC had signed advertisers as well as affiliates to its nascent network. It promised sponsors that its prime time shows would average five rating points and its late evening talk show three rating points in its first year and had agreed, in line with industry practice, to "make good" any shortfalls by either returning money to sponsors or offering them "free" air time. It also forecast that over its first five years, it would average seven rating points in prime time and four points in the late evening. By comparison, in 1985 the three established networks averaged 14.9 points and 4.7 points respectively in those slots. FBC's affiliates, in contrast, averaged well under 4 points during prime time, when they mostly broadcast movies, and 2 points in the late evening, when they focussed on situation comedies or dramas. Most of these stations tended to receive their highest ratings between 3:00 - 8:00 PM and 10:00 - 11:00 PM on weekdays.

FBC intended to retain 14 30-second spots for its own use during each hour of prime time programming and 10 30-second spots during each hour of late evening programming and intended to price its advertisements 20% below comparable rates (per rating point) set by established networks. During 1985, the networks priced 30 seconds of advertising time at $7,024 per rating point during prime time and $4,393 per rating point during late evening.

FBC held commitments from advertisers through the first quarter of 1987. Bristol-Meyers was the first major sponsor of the Joan Rivers show with planned expenditures of $1.5 million over a year. Over 30 other national advertisers, including American Motors, General Foods, J.C. Penney, Johnson & Johnson, Ralston Purina and Sears-Roebuck were supporting FBC with contracts of up to one year. FBC encountered resistance from other potential advertisers because it did not allow them to preview its pilot programs but was in the process of reviewing this policy.

As stated, FBC budgeted $40 million for promoting itself to advertisers, affiliates, and viewers during its first year of operation. Over time, FBC's promotional expenditures were likely to level off at 10% - 15% of advertising revenues.

Outlook

Murdoch offered a very simple summary of the pros and cons of launching a fourth U.S. TV network: "What I would say about television is that certainly so long as there are networks, and probably with or without networks, television is going to increase its share of the advertising pie. Now whether the advertising pie is going to increase as well is an open question."[13]

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[13] *Broadcasting* (April 3, 1986): 70.

Exhibit 1 The Broadcast Television Industry

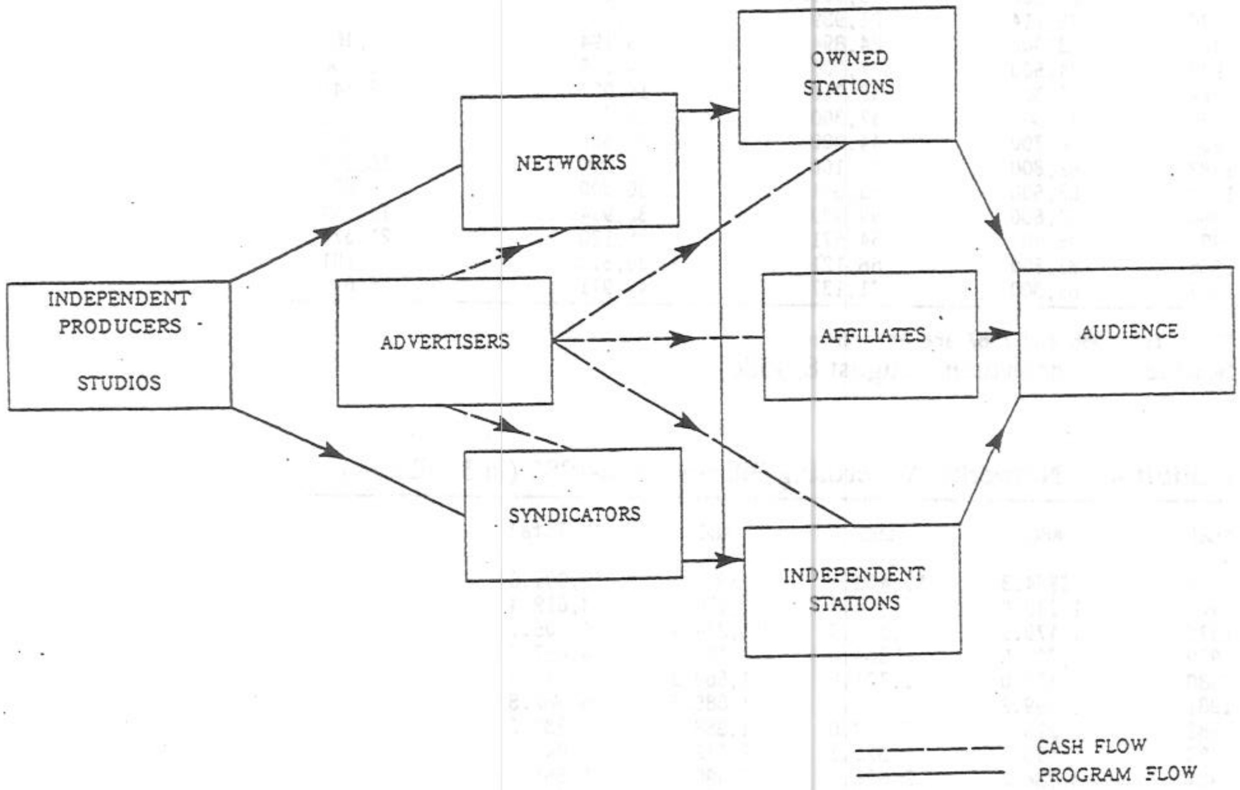

INDEPENDENT PRODUCERS
STUDIOS
NETWORKS
ADVERTISERS
SYNDICATORS
OWNED STATIONS
AFFILIATES
INDEPENDENT STATIONS
AUDIENCE
CASH FLOW
PROGRAM FLOW

Exhibit 2 Networks' Prime Time Ratings: 1976-1985 (in rating points)

Year	ABC	CBS	NBC
1976	18.7	17.1	16.4
1977	18.9	16.8	16.3
1978	18.7	17.1	16.4
1979	18.8	17.5	15.4
1980	17.1	17.4	15.7
1981	16.5	17.5	14.9
1982	15.7	16.6	13.8
1983	15.9	16.2	14.1
1984	15.4	14.9	13.9
1985	13.9	15.0	15.4
1986	12.8	13.1	14.6

Source: ABC Research Division Report, January 24, 1986.

Exhibit 3 Evolution of the Cable Industry: 1975-1987[a] (in thousands)

Year	Television Households	Homes Passed	Basic Subscribers	Pay Subscribers
1975	69,600	19,900	11,136	NA
1976	71,114	21,989	12,094	505
1977	73,300	24,894	13,194	1,466
1978	74,500	27,200	14,155	2,980
1979	76,300	32,700	16,023	5,341
1980	77,800	37,300	18,672	7,780
1981	80,700	44,000	22,596	11,804
1982	82,800	49,100	28,200	15,898
1983	83,500	53,641	30,300	17,877
1984	84,600	59,989	32,994	19,764
1985	86,304	64,571	36,120	21,672
1986	87,800	68,121	39,510	24,101
1987	89,300	71,137	41,971	26,022

[a] Data for 1986 and 1987 are estimated.

Source: *Cablevision* (August 8, 1986): 82.

Exhibit 4 Networks' Advertising Billings: 1976-1985 (in $ millions)

Year	ABC	CBS	NBC	Total
1976	$954.3	$1,405.6	$991.7	$2,991.6
1977	1,242.0	1,206.7	1,170.7	3,619.4
1978	1,479.9	1,350.3	1,274.9	4,105.1
1979	1,706.5	1,564.9	1,425.9	4,697.3
1980	1,877.0	1,701.0	1,569.3	5,147.3
1981	2,099.2	1,898.0	1,685.6	5,682.8
1982	2,216.5	2,157.6	1,858.1	6,232.2
1983	2,495.7	2,373.1	2,172.8	7,041.6
1984	3,236.2	2,828.2	2,490.9	8,555.3
1985	2,688.5	2,887.0	2,738.0	8,313.5
1985 (# commercial minutes)[a]	39,171	51,556	42,512	133,239

[a] Although most networks adhere to the National Association of Broadcasters' recommendation of 6 commercial minutes per prime time hour, the number of commercials allowed during daytime and on weekends varies. Independent stations usually allow more commercials, up to 12 minutes per hour.

Source: *TV and Cable Factbook*, No. 53.

Exhibit 5 Networks' Financial Performance: 1984-1985 (in $ millions)

	ABC		CBS		NBC	
	1984	1985	1984	1985	1984	1985
Revenue[a]						
TV network	$2,681	$2,161	$2,240	$2,276	$1,980	$2,176
Owned stations	465	465	315	332	340	365
Operating Income						
TV network	260	170	280	227	105	203
Owned stations	145	132	110	114	115	128

[a] Figures do not agree exactly with those reported in Exhibit 4.

Source: *Broadcasting* (May 5, 1986): 35.

Exhibit 6 Selected Network Data: 1986

	ABC	CBS	NBC
Broadcast group employees	8,000	7,555	8,465
News staff	1,023	1,320	1,261
Affiliate compensation	$120 million	$168 million	$141 million
News Division performance	$ 37 million[a]	($ 31 million)[b]	($ 64 million)
Pretax operating profit	($ 70 million)	$ 80 million	$250 million

[a] Includes *20/20* and *Nightline*
[b] Excludes *60 Minutes*

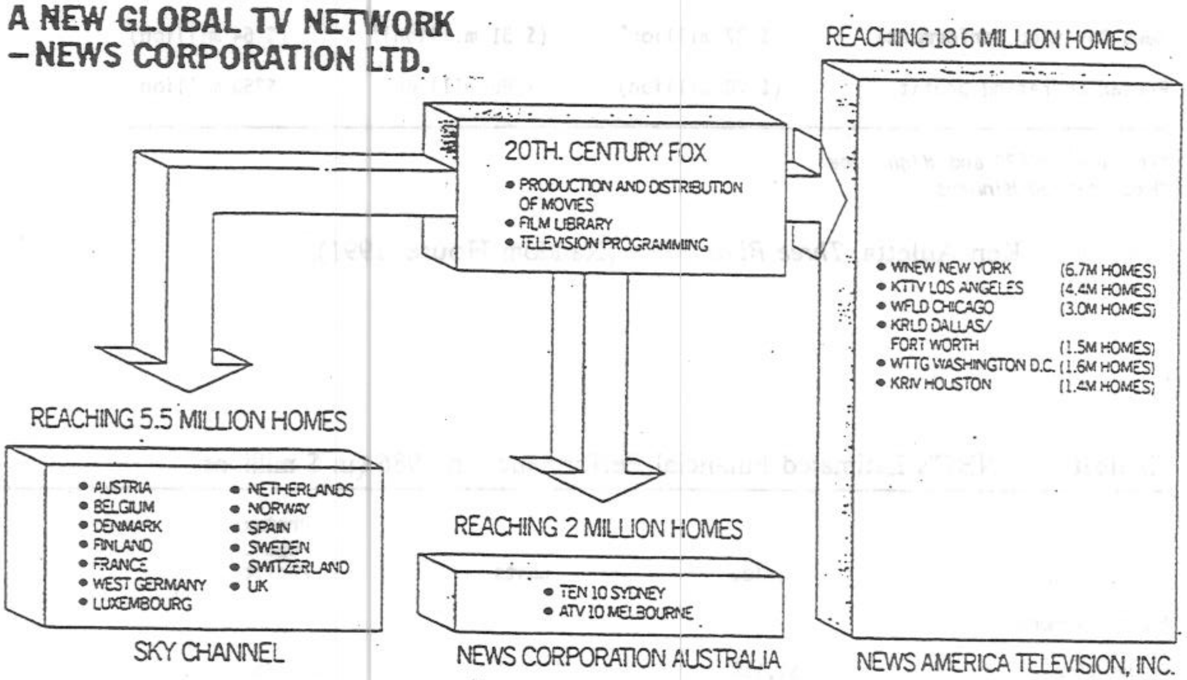
Source: Ken Auletta, *Three Blind Mice* (Random House, 1991).

Exhibit 7 NBC's Estimated Financial Performance in 1986 (in $ millions)

	Sales	Costs	Pretax Oper. Profit
Entertainment			
Prime time	$1,150	$ 775	$ 375
Day time	300	130	170
Late night	125	80	45
Children's	65	30	35
Development/other	-	40	(40)
Total Entertainment	$1,640	$1,055	$ 585
Sports	400	385	15
News	250	225	25
Other	-	25	(25)
Total Broadcast Division	$2,290	$1,690	$ 600
Indirect cost of sales	-	150	(150)
Selling, general, and administrative	-	200	(200)
Total	$2,290	$2,040	$ 250

Source: Casewriter estimates

Exhibit 8 News Corporation's TV Interests


A NEW GLOBAL TV NETWORK
– NEWS CORPORATION LTD.
20TH. CENTURY FOX
• PRODUCTION AND DISTRIBUTION OF MOVIES
• FILM LIBRARY
• TELEVISION PROGRAMMING
REACHING 5.5 MILLION HOMES
• AUSTRIA
• BELGIUM
• DENMARK
• FINLAND
• FRANCE
• WEST GERMANY
• LUXEMBOURG
• NETHERLANDS
• NORWAY
• SPAIN
• SWEDEN
• SWITZERLAND
• UK
SKY CHANNEL
REACHING 2 MILLION HOMES
• TEN 10 SYDNEY
• ATV 10 MELBOURNE
NEWS CORPORATION AUSTRALIA
REACHING 18.6 MILLION HOMES
• WNEW NEW YORK (6.7M HOMES)
• KTTV LOS ANGELES (4.4M HOMES)
• WFLD CHICAGO (3.0M HOMES)
• KRLD DALLAS/FORT WORTH (1.5M HOMES)
• WTTG WASHINGTON D.C. (1.6M HOMES)
• KRIV HOUSTON (1.4M HOMES)
NEWS AMERICA TELEVISION, INC.

Source: Saatchi & Saatchi Compton, *Worldwide Review of Advertising Operations, 1985.*

Exhibit 9 FBC's Programming Plans[a]

Type of Program	Daypart	Episode Duration	Production Cost per Episode
Talk show	Late evening	1 hour	$ 50,000
Adventure	Prime time	1 hour	950,000
Situation comedy	Prime time	½ hour	350,000

Type of Program	Number of Series	Annual Episode per Series	Annual Broadcast Hours[b]
Talk show	1	250	260
Adventure	1	26	52
Situation comedy	8	26	208

[a] FBC would pay 100% of production costs for programming produced by Twentieth Century-Fox. However, FBC would pay 80% of production costs for programming produced by other studios. One estimate suggested that about 25% of FBC's programming would be produced by Twentieth Century Fox's Studios.
[b] Includes repeat broadcasts

Source: Published reports

Exhibit 10 Metromedia Stations Acquired by FBC[a]

Station, Location and Year Commercial Operation Commenced	Channel	National Ranking of Market Served	Estimated Value to News Corp. ($ million)	1986 Prime Time Avg. Rating	1986 Late Night Avg. Rating[b]
WNEW-TV New York, New York, 1944	VHF, 5	1	$560	N.A.	N.A.
KTTV Los Angeles, California, 1949	VHF, 11	2	430	4.5	2.0
WFLD-TV Chicago, Illinois, 1966	UHF, 32	3	210	3.5	2.0
KRLD-TV Dallas/Ft. Worth, Texas, 1980	UHF, 33	8	35	N.A	N.A
WTTG Washington, D.C., 1947	VHF, 5	9	230	7.0	5.0
KRIV-TV Houston, Texas, 1971	UHF, 26	10	175	4.5	4.5

[a] Ratings for these stations were generally higher than those of most FBC affiliates.
[b] Does not include *Joan River's Show* ratings.

Source: FBC Prospectus, casewriter estimates, *Broadcasting* (May 13, 1985): 38.

Appendix

Television Ratings and Advertising Rates

The success of a television program in the United States is usually measured by its "ratings." These ratings represent the percentage of households watching a particular program at a given time. In 1985, each rating point represented 859,000 households. Ratings are determined by the A. C. Nielsen Co., a subsidiary of Dun & Bradstreet, through meters attached to the television sets of selected families, and, for overnight results, by telephone samples. Producers also receive statistics on a program's share, or percentage of television sets in use during a given time period. The average **network** ratings for 1985 were:

Daypart	Rating
Daytime (M-F 10:00 AM - 4:30 PM)	5.6
Early News (M-F 6:30 PM - 7:30 PM)	10.7
Prime Time (M-S 8:00 PM - 11:00 PM)	14.9
Late Evening (11:30 PM - 1:00 AM)	4.7

In addition to these broad measures, networks and advertisers commission special demographic reports that show the audience composition by age, sex, race and income level for each show. Demographic statistics are especially important to advertisers trying to reach a specific market segment.

Television commercials, like most advertisements, are priced according to the cost to reach 1,000 audience members (known as CPM or cost per thousand). This rate varies with advertising demand during a particular program, time of day, time of year, and the demographic profile of the audience. The growth in average network television CPM is shown below:

Daypart	1965	1970	1975	1980	1985
Daytime	$0.75	$0.85	$1.00	$2.25	$3.10
Early News	1.40	1.55	1.65	3.35	5.45
Prime Time	1.95	2.20	2.55	5.65	8.25
Late Eve.	2.05	1.95	2.00	4.25	5.60

Advertisers can purchase commercial time from several different sources. Network ads can be "pre-bought," or purchased in advance of a new television season, with projected ratings used to set prices. Alternately, they can purchase ads before a program's broadcast date (on the "spot market"). Commercials can also be placed with syndicators for daily or weekly inclusion. Finally, local and national advertisers often buy time from local stations. Local advertising rates, although they vary according to the size of each market, are usually significantly below national and rates (both "pre-bought" and spot) on a per-minute basis, but 5% - 20% above on a CPM basis.

Chapter 8

Consumer Measurement — A Review

The success of a proactive design strategy depends on determining a product strategy that will be attractive to consumers. Throughout this book a number of managerial and analytic techniques are introduced to design and position products in such a way as to attract consumers, but these techniques are only as good as the data on which they are based. Thus the consumer measurement which produces this data is critical to the success of new product strategy. Careful, exacting market research can lead to creative insights into consumer wants and needs and result in superior products. On the other hand, careless research will cause the manager to miss opportunities and in many cases lead to errors in product design.

This chapter reviews some of the considerations in consumer measurement that are particularly important in new product design. It is not a substitute for a course in market research, rather it is meant to briefly highlight the relevant topics and provide specific examples relevant to new products. For more detail on market research in general, readers are referred to Green and Tull, 1978; Payne, 1951; Oppenheim, 1966; Churchill, 1976; Boyd, Westfall and Stasch, 1977, and Lehmann, 1979.

CONSUMER MEASUREMENT PROCESS

It is important to remember that in developing new products, market research is conducted to support decision making. Although many interesting behavioral issues might be addressed in a consumer survey, the managerial usefulness will be judged by its ability to improve decisions. In our

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case, the study will support models that lead to improved new product designs and higher chances for new product success.

Figure 8.1 shows a measurement process that begins with decision requirements and proceeds to model estimation. The decision requirements are key considerations in deciding the methodology for the study. Should a questionnaire be used or can a different method yield the information? Should qualitative or quantitative measures be used? Is an experimental variation of decision variables necessary? These methodological issues must reflect the needed accuracy of the information, the costs of this information, and its value in improving decisions. One explicit cost tradeoff is in sampling. What sample size is required? Should the sample be random or is a purposive sample more appropriate? If the appropriate method is a survey, the questionnaire must next be formulated and tested. Many pitfalls await the untrained person in writing a questionnaire. Inaccuracies due to ambiguity or to unwillingness or inability to respond must be minimized. We will see in Chapter 9 that part of most new product questionnaires are attitude scales. The selection and implementation of the scales is extremely important and must be done carefully.

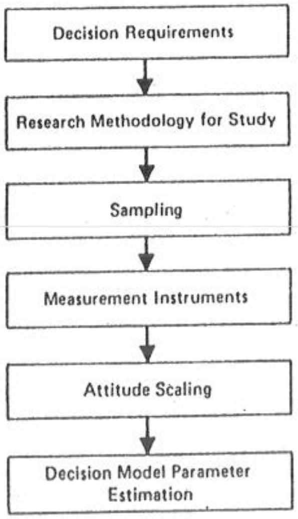

Figure 8.1. *Consumer Measurement Process*

In new products, several dimensions of attitude are usually present; the process of attaching numerical values to products along these dimensions is called "multidimensional scaling." These numerical values are especially important when models are being used to analyze decision alternatives. For example in the design process, multidimensional scaling is critical to modeling consumer perception and diagnosing consumer response to new products.

In this chapter we review selected aspects in each phase of the measurement process. The issues presented are those most critical to successful design of new products. The remaining chapters present additional measurement issues and demonstrate the link of measurement to models and to managerial decision making.

RESEARCH METHODS

Although many of the analysis and decision steps are based on quantitative measurement, an organization should not neglect archival and qualitative research. Early in the new product design process they are important. For example, focus groups are more effective for idea generation than questionnaires. However, as the product development process proceeds, the quantitative measures become essential. But even then, quantitative measurement should not be used alone. Usually, the analysis process begins with qualitative techniques and an archival search to raise issues, to identify attribute scales, to provide consumer semantics, and to help direct the quantitative measurement to the areas that appear to be most productive. This section will briefly review archival, qualitative, and quantitative methodologies.

Archival Search

A proactive strategy by definition searches for *new* ideas, but this does not mean that existing data sources are to be ignored. Secondary data, i.e., data collected for reasons other than new product development, can provide useful information which may direct the search to more productive areas or save the expense of gathering data that is available from other sources. This data might come from internal sources, U.S. government statistics, special data services, or other external sources.

Internal Sources. Some internal sources may relate specifically to the product category under investigation. If the organization already has a product in the category or if we are considering a major change to an existing product, then sales records, advertising records, complaint/compliment files, or warranty records may provide useful clues to opportunities. For example, Chapter 3 used the example of scientific instrument firms responding to consumers who build their own equipment. Occasionally market research will have been done to monitor a category or innovate in a related category, or product managers with experience in the category can provide insights worth further investigation.

Government Statistics. U.S. Census figures or other government statistics can be used to monitor demographic changes or for an estimate of category potential. For example, stackable washer/dryers are an innovation resulting from the recognition through governmental data of the number of apartment and condominium dwellers. Furthermore, the demographics can be used to check the representativeness of a consumer survey. Another government source worth investigating is the *Statistical Abstract of the United States*—this secondary source can be used to search for primary sources of government data.

Special Data Services. Some examples of special data services are: Dun and Bradstreet's Market Identifiers, Nielsen's Retail Index, SAMI Warehouse Sales, the Nielsen Television Index, the Starch Advertisement Readership Service, the Simmons Media/Marketing Services, TRENDEX, the MRCA Consumer Panel, the National Family Opinion Panel, the Consumer Mail Panel, and Predicasts. While all of these are available at some cost to the user, they may be cost-effective for specific categories and for putting together components of the marketing strategy. Finally, there are published sources of archival data such as Moody's Manuals, the Rand McNally Commercial Atlas and Marketing Guide, and the World Almanac and Book of Facts. For further information, see Churchill (1976), which contains detailed descriptions of the special data sources plus short descriptions of thirty-seven published sources and a bibliography of additional published guides to archival data.

Archival data should be used with caution since it is collected for other purposes and may not exactly fit the category under investigation. But it is quickly obtained, may be less expensive, can lead to later efficiencies, and provides an external check to any qualitative or quantitative measurement. Although archival data may not meet all the managerial requirements, it is an important source to examine before primary measurement is undertaken.

Qualitative Measurement

New product development seeks to discover what the consumer views as important in a product category. Qualitative measurement is based on in-depth probes into the consumer's viewpoint. Its purpose is not to identify the best strategy, or to project demand, or even to select the most important product features. Instead, qualitative measurement raises issues by exploring the consumers' basic needs and desires. The qualitative researcher enters the process with an open mind, seeking to learn by simply listening to the consumer.

A primary method of qualitative research is focus group interviews. We presented this method in connection with idea generation in Chapter 6. Focus groups are also useful in the design process. For example, in focus groups for "Shared Ride Auto Transit"—a form of organized hitchhiking—the U.S. Department of Transportation (1977) confirmed its intuition about

the importance of safety, dependability, reliability, flexibility, and personal freedom in consumers' reactions to various strategies. But they also uncovered some surprises. Major objections to "Shared Ride" were based on not wanting to be obligated or indebted to other people. Riders felt better paying, but drivers felt very uncomfortable in accepting payment. A number of consumer misunderstandings were uncovered, e.g., most consumers felt they paid higher insurance for carpooling when in fact they paid lower premiums. When Shared Ride was described as "community carpooling," there was better initial reaction and greater willingness to experiment. When Shared Ride was called "organized hitchhiking," however, consumers' attitudes immediately turned against the system.

An important function of qualitative research in the design process is to generate a list of attributes of products within the category. For example, Table 8.1 contains a list of twenty constructs which describe management education. This list forms the basis of the identification of consumer perceptions (Chapter 9). It is important that the list be as exhaustive as possible, covering a wide array of physical and psychological characteristics, if they are at all relevant to the category. Ideas come from the transcripts of the focus groups, individual in-depth interviews, previous studies, and prior managerial beliefs. The emphasis is on breadth, even if redundancy is inherent, because later analysis will identify the underlying structure. The fo-

Table 8.1. Twenty Constructs Which Describe Management Education

1. With a degree from this school, I'd be joining a world-wide "fraternity," an effective alumni network.
2. The program emphasizes training in skills that can be used in advising decision makers on what course of action to take.
3. The content of the program would be highly relevant to the decisions I expect to make in a management position in the next five years.
4. I would not be exposed to the newest, most advanced management techniques.
5. I'd be learning a common-sense approach to problem solving.
6. The school provides excellent teaching.
7. The school is oriented toward those who want to take personal responsibility for making major decisions.
8. The program is very theoretical, with limited "real-world" focus.
9. There would not be a high level of contact with faculty members.
10. The school has a "high-prestige" reputation.
11. Financial aid in the form of loans, grants, or assistantships is widely and easily available.
12. I would have a great deal of flexibility to structure a program to suit my own needs and interests.
13. The majority of faculty are academicians and have never been practicing managers.
14. The students are not very likely to be cooperative and friendly.
15. With a degree from this school, the most exciting job opportunities will be open to me upon graduation.
16. I could not go wrong with a degree from this program.
17. I would be able to command a very high relative starting salary with a degree from this school.
18. The program is very quantitative.
19. The school has an excellent location.
20. The school would emphasize how management is now conducted, not how it should be conducted.

cus group transcripts are used to word each statement in the semantics that the consumers use.

Qualitative research does not provide final answers. It is a useful search technique which helps insure that the quantitative measurements address the issues that are relevant to the design process.

Quantitative Measurement

This measurement provides the input to the analytic techniques used throughout the remaining chapters to identify which specific strategies make the greatest impact on improving the success of a new product design. Specific perceptions and preferences are measured and preliminary estimates of purchase actions are made.

First, archival and qualitative research are used to understand issues and semantics and then a quantitative approach is used to measure attitudes and consumer response. As the product design proceeds through evaluation and refinement, estimates must become more accurate and emphasis is almost exclusively on quantitative measurement.

Since we are concerned with new products, the product concept or prototype can be an experimental treatment in the research. Usually alternatives are presented and quantitative measures are taken. For example several "Stretching" concepts may have been generated and will be evaluated. But, in some cases an explicit experimental design is used to estimate response to product attributes or features.

Since quantitative measurement is often specific to the analyses used in the decision process, we defer some of the details to those sections that cover the specific analysis techniques. We turn now to sampling, and then to questionnaire formulation and attitude scaling.

SAMPLING

After the research method is decided on, sample sizes and sampling methods must be determined. In the qualitative phase small samples are taken. Two or three groups of ten people may be sufficient if issue identification and semantics are the primary concern. Later on, quantitative surveys will require larger sample sizes. It is uncommon to collect fewer than one hundred respondents; in cases where segmentation is important there should be 100 respondents in each major segment. The samples to support design of new products will be substantial, perhaps as large as 200–500. In fact, recent work by Srinivasan (1977) and Einhorn and Hogarth (1975) has shown that naive models which provide little diagnostic information may be indistinguishable from more sophisticated models when samples are small.

Although there are theoretical methods of defining the best sample size

(Schlaifer, 1969; Green and Tull, 1978; Allaire, 1975) based on the value of information, these are very difficult to implement in the complex sequential new product development process. Classical methods of considering the standard deviation of the resulting estimate are useful, but vastly oversimplify the problem, since information is collected in many variables and often analyzed by multivariate scaling methods for which sampling properties have not been fully determined. It appears that judgment, norms, and experience are the best we can do at this time. Perhaps future research will provide more powerful and practical methods of determining the best sample size for new product design.

In general, random samples are best if they can be obtained at a reasonable cost. They tend to be most representative and are less prone to sampling errors. But non-response can be a problem. If, as is usual, 30 to 40 percent of the random sample returns a mail questionnaire, the statistical analysis may be inappropriate unless it can be established that the nonrespondents are a random subgroup of the total sample. This requires that demographic and other characteristics be compared to external sources such as census figures, and corrections made if necessary.

Alternatively, purposive samples can be used if they are done carefully and steps are taken to statistically correct any biases introduced by the sampling (see Appendix 11.3). For example, the use of a shopping mall as a site for market research is becoming common. A respondent is stopped while walking in the mall and, by means of a few questions, qualified as having the desired target group characteristics. Quotas are established for age, sex, demographic, and product use groups. Although these samples are not random, response rates are high (over 60 percent), and their representativeness can be established through statistical corrections. These mall interviews are attractive if personal interviews and product or advertising exposure is essential. Nonetheless, great care is required in the selection of criteria for screening the respondents and careful statistical analysis. They should be scrutinized for any potential biases and these must be corrected.

Purposive samples can be attractive due to their reduced cost, but lower cost should be weighed against potential biases. A good rule of thumb is that purposive samples are more appropriate early in the design process when the primary goal is exploratory analysis. Later in the design process when forecasting becomes important, the representativeness of the sample is crucial and randomness becomes more important.

Do not confuse purposive samples with convenience samples. In purposive samples, explicit selection and screening processes are established, potential biases identified, and steps taken to correct for those biases. In convenience samples such as man-in-the-street, church groups, office friends, and university students biases can be hidden. Interpretation of any analyses done on such groups can lead to incorrect strategies for new product development. Thus, in general, we recommend using a random sample with checks for non-response, but consideration should be given to the benfits and costs of purposive surveys with statistical corrections.

MEASUREMENT INSTRUMENTS

When questionnaires are to be used in a sample, a choice must be made between personal, mail, and telephone interviews. In some cases this is not difficult since personal interviews are the only feasible solution. For example, if a food product is to be tasted, personal contact is required. In other cases, the format (mail, telephone, personal interview) depends on the information that is being collected. For example, for complex perception and preference questions personal interviews are best, but we have found the mail format represents an acceptable tradeoff when budgets are limited. The specifics of the questionnaire, the group to be interviewed, and the research budget must all be considered before a choice is made.

Questionnaire Design

A questionnaire must be carefully constructed to collect the appropriate information with a minimum of bias. Questionnaire design is an art. In this section we cover some representative considerations in questionnaire design and indicate some of the pitfalls to avoid.

Respondents must be motivated to participate. Convincing the respondents of the importance of the work is desirable. For example, a study of health services began with an explanation that the survey would measure health needs so that improved health services could be developed. Stressing the importance of each individual respondent's input is useful. In cases where cooperation may be low, personal interviews with personable interviewers can be effective. Increasingly, respondents are given compensation for their cooperation. For example, in a study of investors a hand held calculator was given each respondent. In a study of graduate students, each respondent was given a six-pack of imported beer. In consumer products a coupon worth two dollars may be given. The use of an incentive helps to increase the response rate, thereby reducing the damage of non-response bias, but non-financial motivations should not be overlooked.

Proper motivation can be used to reduce non-response bias. But a good response rate does not necessarily mean good measurement. Improperly worded questions can be misleading to the respondent, to the analyst, and to the manager. For example:

"Do you like the taste of calamari?"

In this case the respondent may not know that calamari is the Italian word for squid. The question would underestimate consumer appreciation.

"Do you agree that the Massachusetts Health Foundation provides excellent care?"

This one-sided question, although good for public relations, tends to bias the response toward agree. A better question would give both sides of the argument, i.e.:

"In your experience, does the Massachusetts Health Foundation provide excellent care or does it provide poor care?"

Alternatively, one of the attitude scaling techniques, which are described below, could be used. The pitfalls of question wording are numerous and can only be avoided through great care and careful testing of each question or set of questions. Both Payne (1951) and Oppenheim (1966) provide examples of many of these problems and how to overcome them. Payne provides an extensive list of problem words to avoid and a checklist of 100 points to consider before each questionnaire is taken to the field. Developing a good questionnaire can be costly and time consuming, but the rewards are great through more usable information and a better understanding of the consumer.

A good questionnaire requires careful planning, which should begin long before questions are actually written. In preparing a questionnaire it is important to recall the managerial questions that need to be answered, the analytic techniques to answer those questions, and the specific information that the techniques need. First, the major sections of the questionnaire should be specified. This block layout allows the new product design team to: (1) make rational tradeoffs about the length and the necessity of various sections, (2) ensure that all needed information is collected, (3) eliminate unnecessary redundancy, (4) construct a smooth flow of response throughout the questionnaire, and (5) check ordering requirements (e.g., preference valuation should come after attribute scales to avoid what are known as "halo effects"—Beckwith and Lehmann, 1976). For example, Table 8.2 is the block design for a questionnaire used by the City of Evanston, Il. to identify new transportation services. (See Hauser, Tybout, and Koppelman, 1979.) Note that each section has a specific purpose, and each section after the warm-up questions is specific to an analytic model. (The analytic methods are those described in subsequent chapters.)

After the block design is complete, focus groups and previous experience provide the input to word and reword the questions so that they accurately gather the information needed for the analysis. Small samples are used to pretest the questionnaire. Respondents are reinterviewed about their responses to be sure they were thinking of the same issues as the researcher when answering the questions. After the pretest and possibly preanalysis, the questionnaire is revised and implemented with a representative sample of the target population.

As we have said, questionnaire design is an art. Each reader should try to develop this skill by designing a questionnaire and having a colleague critique it. Examine it in light of the pitfalls described below. Everyone who uses market research should actually administer a questionnaire to some respondents at least once in order to understand the issues of non-response, ambiguity, and inaccuracy.

Some Pitfalls and How to Avoid Them

There is no simple formula for producing a good questionnaire. Instead we identify some of the common mistakes we have seen in question-

Table 8.2. Block Design for a Questionnaire to Investigate Consumer Views on Transportation Innovation

Block Description	Purpose	Analysis Technique*
1. Cover letter	Generate interest, motivate respondents	Motivation (8)
2. Warm-up questions	Gain rapport with consumer	Motivation (8)
3. Recent trip scenario sampling/Transportation choice for scenario	Representative sample of scenarios/Potential stratification by scenario	Benefit segmentation (10)
4. Instructions for rating transportation alternatives	Aid to response/Consider recent trip/Express *opinions*	Factor analysis (9)
5. Attribute scales for bus, walk, and car	Input to models of perception	Factor analysis (9)
6. Preference among available modes/ Frequency of use of all modes	Input to models of preference and choice behavior	Preference regression (10)/Logit analysis (11)
7. Self-reported travel characteristics	Input to models of choice/ Link to consumer attitudes	Logit analysis (11)
8. Stretching concepts for new modes/Attribute scales for stretching concepts	Enhance validity for changes in transportation system	Used with 4 and 5 above
9. Preference for available modes including stretching concepts	Estimate more complete models/Internal validation of preference models	Preference regression (10)
10. Conditional intent	Indicates behavior changes based upon changes in system characteristics	Intent model (11)
11. Importance ratings for the attribute scales	Alternative measure of preference	Importance model (10)
12. Transportation facts such as location of home, location of nearest bus stop, etc.	Enables measurement or estimation of benefits delivery	Purchase model (11)
13. Demographics	Personal descriptions for use in segmentation	Benefit segmentation (10)
14. Open-ended comments	Qualitative input for completeness	Qualitative input (8)

Numbers in parentheses indicate chapter in which technique is described.

naires designed by our students and by professional market researchers. Recognition of these pitfalls should help you avoid many of them. In addition, we give guidelines that we try to follow in developing our own questionnaires. Some of these guidelines may seem costly, such as a major pretest and preanalysis, but considering the stakes in new product development, we feel this cost is justified. Among the major pitfalls we have seen are use of the wrong semantics, low motivation, poor initial questions, difficult questions

to answer, products unfamiliar to the respondents, no pretest, no preanalysis, poor sampling, and under-budgeted marketing research.

Wrong Semantics. Since you are trying to measure consumers' responses, the questions must be phrased in the language which consumers use. Rather than using the jargon of engineering, medicine, business, etc., use the language of the consumer. If a consumer talks about the time it takes to walk from his bus stop to the office, you do not ask, "What is the egress portion of your work trip via the bus mode?" If a consumer says his deodorant helps him stay "dry," you do not ask about "perspiration prevention." Rather than "minimization of propensity for cardiovascular infarction," you talk about "preventing heart attacks." A good way to discover the right semantics is through focus groups. Careful pretesting is necessary to see that respondents understand all words.

It is easy to write a biased question; difficult to write an unbiased one. While it is easy to ask, "Is the mayor doing a good job?," it is preferable to ask, "Is the mayor doing a good job, or a poor job?" A useful exercise is to ask yourself the reporter's five questions: "Who? Why? When? Where? and How?" It should be clear to the consumer which of these questions is being asked. If your question has more than one meaning, the consumer may well choose the wrong meaning. Consider Payne's example of the five-word question, "Why did you say that?" This simple question can have five different meanings, depending upon which word the consumer emphasizes in reading the question.

> WHY did you say that?
> Why DID you say that?
> Why did YOU say that?
> Why did you SAY that?
> Why did you say THAT?

Without a pretest in which consumers read aloud the question, the semantics problem might well go unnoticed.

Low Motivation. It is important to the analysis that the consumer is involved with the questions and gives them the proper thought. Since poor responses are often indistinguishable from thoughtful responses, poor motivation brings ambiguity and inaccuracy. Specific questions must seem real and relevant; the questionnaire must flow smoothly and be interesting.

The credibility of the research firm and the anonymity (if appropriate) of the survey must be established rapidly. It is useful to tell the respondent what the study is about, why his inputs are crucial, how his name was selected, and how the results will be used.

Poor Initial Questions. It is tempting to start immediately with the most important questions, but it is better to begin with some simple warmup questions which will give the respondent confidence, allow the respondent to voice personal opinions, and lead smoothly into the more difficult or substantive questions of the survey. The warmup questions bring the respondents' frame of reference to the topic of the questionnaire.

Difficult Questions to Answer. How many questionnaires have you completed that require a magnifying glass to read, or have so many circles and arrows that you never know what question to answer, or have computer precoding right in the margin so that you feel like a punch card? All these characteristics have some benefits, but they must be used carefully and with much forethought. Reducing the print and eliminating white space gets more questions on a page and thus reduces the number of pages, but it may also reduce the response rate. Branching in a questionnaire directs the right questions to the right people, but it can get out of hand. "Office use only" computerese in the margin saves coding time, but the small savings in coding hardly seems worth the loss in respondent rapport.

Products Unfamiliar to the Respondents. There are over fifteen brands of deodorant on the market. Of these, how many could you seriously evaluate? In other words, how many: (1) have you used, (2) have on hand at home, (3) would you seriously consider using, or (4) would you definitely not use? Chances are that fewer than five brands of deodorant would pass any of the four criteria. In fact, in a study of over 200 consumers, Silk and Urban (1978) found that the average "evoked set" size was about three deodorants when "evoked set" was defined by the above criteria. If you ask consumers to evaluate products on the 15 to 30 attribute scales and you want these answers to be relevant, you must limit your questions to the evoked set. Alternatively, you can expand the evoked set by giving the consumer some detailed description, say a concept statement, of the product that is being evaluated. Ignoring evoked set limitations can cause erroneous interpretations and lead to inappropriate strategies. Note that for new product research all four criteria are important: "have used" to get experience, "have on hand at home" to get purchase and possibly consumption, "seriously consider" to get at dimensions the consumer considers important in that category, and "definitely not use" to uncover the bad features of a product in the category. This definition of the evoked set (due to Allaire, 1973) differs from the traditional definition (Howard and Sheth, 1969) by the inclusion of the fourth criterion. Inclusion of the fourth criterion can provide much additional information. Together these criteria ensure the evoked set gives the information that is necessary for proactive new product design.

No Pretest. No matter how much experience you have or how carefully you examine and re-examine questions, you can still misword or misdirect a question or set of questions. Perhaps the most important element in questionnaire design is pretest. No matter how carefully you design a questionnaire, it is probable that you will make at least a few mistakes. Pretest is in a sense a carefully monitored mini-study where you give your questionnaire to consumers in your target population and have them try to answer it.

A sample size of ten is common. After a question is answered, you can ask them what they thought it asked. You can try different forms of the question. You can watch for careless response or no response. You can ask a number of similar questions and check the internal consistency, or you can check the responses against your prior beliefs (Campbell and Fiske, 1959). You can do whatever is necessary to ensure that what you think is being asked is actually what is being answered. This step takes time and may delay a study, but without it you can never be confident that your measurement is reasonably unbiased.

No Preanalysis. Just as important as pretest is preanalysis where you try the analytic methods on the pretest data. Preanalysis ensures that you have included the right questions to address the issues. For example, in one questionnaire we measured frequency of purchase with a category for "5 or 6" purchases, but discovered through pretest data analysis that it was important to the analysis to distinguish between 5 times per month and 6 times per month. In another study we measured all the psychological characteristics of shopping centers, but had to construct an accessibility measure since it was not asked in the questionnaire. Preanalysis is not relevant to decision making since the sample is small, but it does help identify omitted data questions. If the results are interpretable within the small sample size limits, then you are ready for the full study; if not, then another iteration of the questionnaire may be necessary.

Poor Sampling. It is easy to hand out your questionnaire to anyone who will take it. You can increase your response rate if you have the respondent who does not want to answer your questionnaire pass it to someone who will. In transportation you have a captive audience if you do your survey on board a bus. An inexpensive way to reach consumers who buy color television is to have them fill out a questionnaire after they buy one of your television sets. You can poll your colleagues or your office staff, or you can intercept the man on the street. You can do all this, but don't treat the sample as random or representative of your target population. Although you can sometimes correct purposive sampling such as on-board surveys or point-of-purchase surveys, most of the models in this book are predicated on a random or stratified sample. Departure from randomness is sometimes done under extreme cost pressure, but methods of assuring representativeness must then be carefully considered.

Under-Budgeted Market Research. Not allowing enough funds for survey research can result in insufficient sample sizes or can result in mail surveys when personal interviews are recommended. Costs of field work vary by such factors as the incidence of a target group in a population, complexity of questions, callbacks, and screening, but for new product design personal interviews (45 minutes) usually will cost in the range of $40 to $70 per completed interview. Mail surveys cost less at $10 to $20 per completed response. Shopping mall intercepts are about $20 to $40 per response. A typical design study with personal interviews of 200 respondents should be budgeted at about $10,000 for the field work *alone.* Budgets for questionnaire formulation, analysis, report writing, and oral presentation bring the total for an average study to over $30,000. While this may seem high, it should be weighed against the benefits. For example, Chapter 3 estimated the average benefits due to front-end design as at least $1.5 million.

On the other hand, not all organizations can afford $30,000 for survey research. Often "in-kind" support can be substituted for cash outlays. For example, many hospitals use trained volunteers for telephone interviewing, mailing, and questionnaire coding. This "in-kind" support makes efficient use of otherwise underutilized resources. But organizations should carefully consider all cost-saving strategies and use them only when sufficient accuracy can be assured. A poorly done survey can often be worse strategically than no survey at all. If funds are extremely limited, they are better directed at qualitative research rather than casual quantitative research.

Summary. The pitfalls we have indicated should be avoided, but avoiding them does not guarantee a good questionnaire. We have found their avoidance a prerequisite for any questionnaires that we have used in new product design, but this short summary cannot replace a more complete discussion such as found in books on market research and/or questionnaire design. Before preparing a questionnaire, study what others have done, gain some firsthand experience, or use consultants with proven skill in questionnaire construction.

ATTITUDE SCALING

Much of the information collected in quantitative measurement is based on psychological scales. Such scales are used primarily to measure the attributes which are based on the constructs identified in the qualitative measurement, but they are also used to measure similarities between products, tradeoffs among attributes, preference among products, intent to purchase, propensity to innovate, and demographics. We now summarize some of the techniques that are particularly useful in measuring attitudes toward new products. The scaling of these measures and their use is discussed more completely in subsequent chapters.

Likert Scale. The most common form of scaling is to give the respondent a strongly worded statement about an attribute of a product and have him react to that statement on a five-point or seven-point agree/disagree scale. This is called a Likert type scale (see Figure 8.2a). The advantages of a Likert type scale are that it measures intensity of feeling about the statement, it is easy to administer, and consumers can respond to it easily. Its main disadvantage is that it measures attributes on an ordinal rather than on an internal scale. For example, in the scales in Figure 8.2a going from "neither agree nor disagree" to "agree" means the health service has higher quality, but we cannot infer that going from "neither agree nor disagree" to "strongly agree" means twice the improvement in quality. Nonetheless, in empirical experience the scales have proven rather robust with respect to

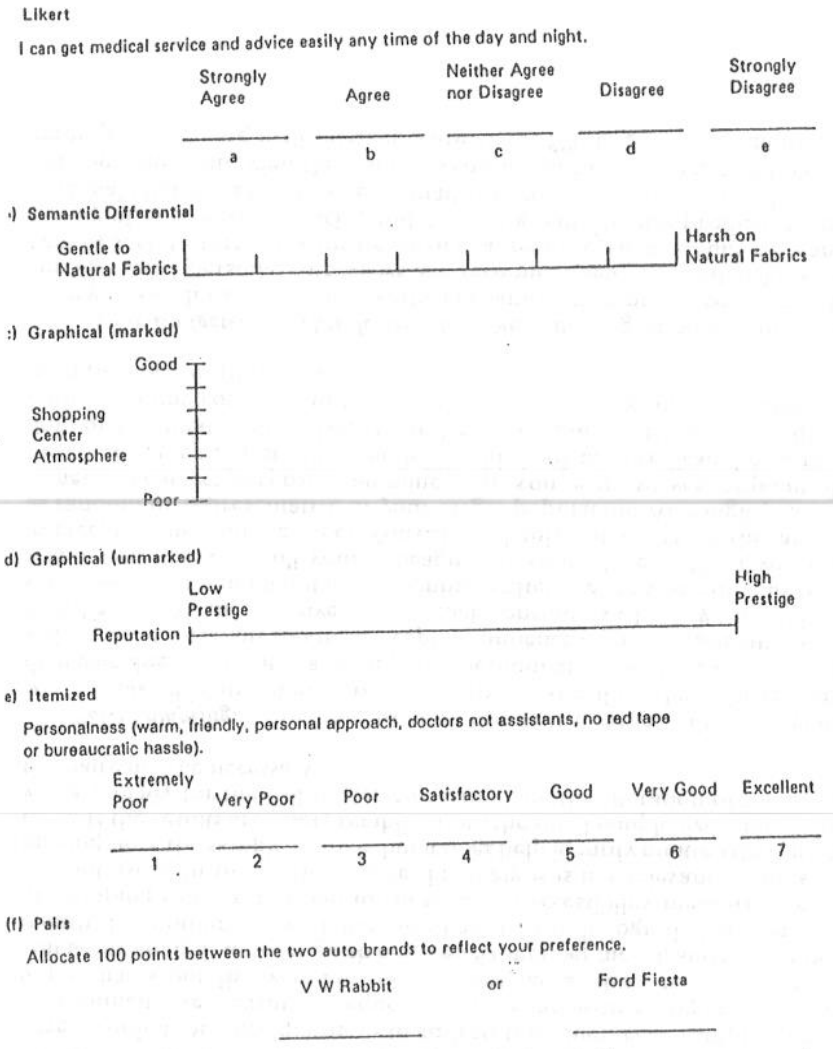
Likert
I can get medical service and advice easily any time of the day and night.
Strongly Agree
Agree
Neither Agree nor Disagree
Disagree
Strongly Disagree
a
b
c
d
e
) Semantic Differential
Gentle to Natural Fabrics
Harsh on Natural Fabrics
) Graphical (marked)
Good
Shopping Center Atmosphere
Poor
d) Graphical (unmarked)
Low Prestige
High Prestige
Reputation
e) Itemized
Personalness (warm, friendly, personal approach, doctors not assistants, no red tape or bureaucratic hassle).
Extremely Poor
Very Poor
Poor
Satisfactory
Good
Very Good
Excellent
1
2
3
4
5
6
7
(f) Pairs
Allocate 100 points between the two auto brands to reflect your preference.
V W Rabbit
or
Ford Fiesta

Figure 8.2. *Different Types of Attribute Scales*

the interval assumption; some manipulations (such as factor analysis and regression) can be performed if the analyst proceeds with caution.

Semantic Differential. In marketing, the most common form of a semantic differential scale is to give the respondent bipolar adjectives or phrases and have the respondent express his feelings about the product by checking a category to indicate how close his feelings are to one or the other of the phrases (see Figure 8.2b). Like the Likert scales, semantic differential scales measure intensity of feeling and are easy to administer or respond to. They can often be used interchangeably with Likert scales, but in some cases it is difficult, if not impossible, to generate the necessary bipolar adjectives or phrases.

Graphical. Rather than using categories, you can have the respondent react to a statement or to bipolar adjectives by indicating his strength of feeling as a position on a line. The line can be marked as in Figure 8.2c, or unmarked as in Figure 8.2d. If marked, the divisions can be few, as shown, or many as in a "thermometer scale." Most applications require that words be associated with at least the endpoints of the scale, although some applications, particularly those with only a few divisions, have been used with no anchor points. As with the Likert and semantic differential, these scales measure intensity of feeling and are easy to administer. Often the respondent finds them more difficult to answer, and unmarked or finely marked scales are difficult to encode for analysis. The interval properties of some of these scales may be slightly stronger than Likert or semantic differential, but not nearly as strong as might be inferred from the seemingly close relationship to the interval properties of a line. We cannot be assured that consumers react to graphical scales in a linear fashion.

Itemized. The itemized scale presents the respondent with an attribute description from which to select a category indicating his belief about how the product rates on that attribute (see Figure 8.2e). These scale questions also measure intensity of feeling and are easy to administer and answer. They do not allow the fine distinctions of graphical scales but are generally more reliable. They have only ordinal properties, but careful selection and testing of categories can get them closer to interval-like scales than either Likert, semantic differential, or graphical measures. Unfortunately, preparing the questions is difficult and tedious, and they require more space on the questionnaire than other scales.

Pairs. Paired comparisons can yield data that can be scaled to produce interval or ratio measures. The example in Figure 8f is called a constant sum comparison. Consumers are asked to allocate a fixed number of points between the two products to indicate their relative intensity of preference. If sufficient pairs are evaluated, a least squares procedure (Torgenson, 1958) or a linear programming procedure (Srinivasan and Shocker, 1973)

can be used to develop an overall preference scale. For more details, see Hauser and Shugan (1980) or Huber and Sheluga (1977).

Other Scales. There are other scales used in psychology that have strong underlying theory, provide good tests of reliability and validity, and are similar in appearance to those we have discussed. Despite these properties, these scales are rarely used in studies which require consumers to rate many products on as many as 15 to 30 scales. They are not used because to achieve these properties each scale requires a major empirical effort. For example, the classical Thurstone scales require roughly 100 individuals to sort 100 to 200 items into 10 piles. Use of Thurstone scales can result in an exorbitant amount of money and effort spent on scaling rather than analysis or strategy. Guttman's scalogram analysis requires 5 to 7 statements and responses for every product on each attribute. Use of Guttman scales can transform a reasonable questionnaire into an exorbitantly long questionnaire.

Scaling. The process of turning scale measures into numerical values is called scaling. Chapters 9 and 10 consider analytic methods of scaling the attitude measures. These multidimensional scaling methods are extremely useful in defining product opportunities and consumer preferences.

SUMMARY

Consumer measurement provides key input to the design of new products. Careful consumer measurement enhances creativity, uncovers greater opportunities, leads to more accurate forecasts, and supports improved new product decision making. The guidelines presented in this chapter should be carefully adapted to the special needs of each particular study. Probably the best advice in consumer measurement is to proceed carefully and cautiously, continually critique the questionnaire, and pretest it on consumers. Seek advice when necessary and avoid making assumptions about how consumers will respond.

Good consumer measurement is difficult, but when done properly it is an extremely powerful tool for the design of new products. We provide more examples of measurement and scaling as we consider models of consumer perception, preference, and choice, and their interaction within the managerial evaluation and refinement process of new product design.

REVIEW QUESTIONS

8.1 What is the ultimate objective of consumer measurement?

8.2 Discuss the relationship between qualitative and quantitative measurement.

8.3 Generate a list of attributes for electric cars. For financial services. How would you scale these attributes?

8.4 What factors must be considered when selecting the sample size for a consumer study?

8.5 In consumer sampling, how is nonresponse a problem? How can nonresponse be minimized?

8.6 How can the manager measure and control the quality of information provided by a consumer with a questionnaire?

8.7 Why is preanalysis important when doing a consumer questionnaire study?

8.8 A company considering the marketing of a new financial service uses a *Fortune* magazine mailing list for sampling perspective buyers.. Could this procedure distort the conclusions which will be reached by the study? If so, how?

8.9 Suppose you were attempting to position a new type of resume service for your fellow students. Construct a questionnaire which attempts to measure the needed information.

8.10 You are introducing a new line of premium wines and want to measure how many consumers will try your product. Write a biased question that will overestimate demand. Write a biased question that will underestimate demand. Write a confusing question. Write a question that will accurately estimate demand.

Chapter 8

Consumer Measurement — A Review

The success of a proactive design strategy depends on determining a product strategy that will be attractive to consumers. Throughout this book a number of managerial and analytic techniques are introduced to design and position products in such a way as to attract consumers, but these techniques are only as good as the data on which they are based. Thus the consumer measurement which produces this data is critical to the success of new product strategy. Careful, exacting market research can lead to creative insights into consumer wants and needs and result in superior products. On the other hand, careless research will cause the manager to miss opportunities and in many cases lead to errors in product design.

This chapter reviews some of the considerations in consumer measurement that are particularly important in new product design. It is not a substitute for a course in market research, rather it is meant to briefly highlight the relevant topics and provide specific examples relevant to new products. For more detail on market research in general, readers are referred to Green and Tull, 1978; Payne, 1951; Oppenheim, 1966; Churchill, 1976; Boyd, Westfall and Stasch, 1977, and Lehmann, 1979.

CONSUMER MEASUREMENT PROCESS

It is important to remember that in developing new products, market research is conducted to support decision making. Although many interesting behavioral issues might be addressed in a consumer survey, the managerial usefulness will be judged by its ability to improve decisions. In our

WHARTON REPROGRAPHICS

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case, the study will support models that lead to improved new product designs and higher chances for new product success.

Figure 8.1 shows a measurement process that begins with decision requirements and proceeds to model estimation. The decision requirements are key considerations in deciding the methodology for the study. Should a questionnaire be used or can a different method yield the information? Should qualitative or quantitative measures be used? Is an experimental variation of decision variables necessary? These methodological issues must reflect the needed accuracy of the information, the costs of this information, and its value in improving decisions. One explicit cost tradeoff is in sampling. What sample size is required? Should the sample be random or is a purposive sample more appropriate? If the appropriate method is a survey, the questionnaire must next be formulated and tested. Many pitfalls await the untrained person in writing a questionnaire. Inaccuracies due to ambiguity or to unwillingness or inability to respond must be minimized. We will see in Chapter 9 that part of most new product questionnaires are attitude scales. The selection and implementation of the scales is extremely important and must be done carefully.

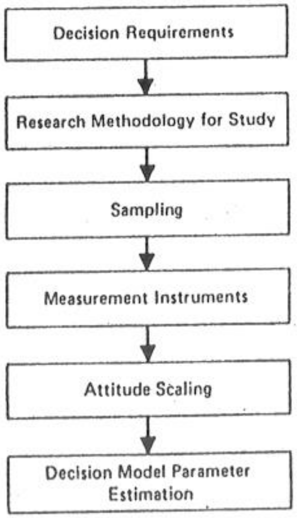

Figure 8.1. *Consumer Measurement Process*

In new products, several dimensions of attitude are usually present; the process of attaching numerical values to products along these dimensions is called "multidimensional scaling." These numerical values are especially important when models are being used to analyze decision alternatives. For example in the design process, multidimensional scaling is critical to modeling consumer perception and diagnosing consumer response to new products.

In this chapter we review selected aspects in each phase of the measurement process. The issues presented are those most critical to successful design of new products. The remaining chapters present additional measurement issues and demonstrate the link of measurement to models and to managerial decision making.

RESEARCH METHODS

Although many of the analysis and decision steps are based on quantitative measurement, an organization should not neglect archival and qualitative research. Early in the new product design process they are important. For example, focus groups are more effective for idea generation than questionnaires. However, as the product development process proceeds, the quantitative measures become essential. But even then, quantitative measurement should not be used alone. Usually, the analysis process begins with qualitative techniques and an archival search to raise issues, to identify attribute scales, to provide consumer semantics, and to help direct the quantitative measurement to the areas that appear to be most productive. This section will briefly review archival, qualitative, and quantitative methodologies.

Archival Search

A proactive strategy by definition searches for *new* ideas, but this does not mean that existing data sources are to be ignored. Secondary data, i.e., data collected for reasons other than new product development, can provide useful information which may direct the search to more productive areas or save the expense of gathering data that is available from other sources. This data might come from internal sources, U.S. government statistics, special data services, or other external sources.

Internal Sources. Some internal sources may relate specifically to the product category under investigation. If the organization already has a product in the category or if we are considering a major change to an existing product, then sales records, advertising records, complaint/compliment files, or warranty records may provide useful clues to opportunities. For example, Chapter 3 used the example of scientific instrument firms responding to consumers who build their own equipment. Occasionally market research will have been done to monitor a category or innovate in a related category, or product managers with experience in the category can provide insights worth further investigation.

Government Statistics. U.S. Census figures or other government statistics can be used to monitor demographic changes or for an estimate of category potential. For example, stackable washer/dryers are an innovation resulting from the recognition through governmental data of the number of apartment and condominium dwellers. Furthermore, the demographics can be used to check the representativeness of a consumer survey. Another government source worth investigating is the *Statistical Abstract of the United States*—this secondary source can be used to search for primary sources of government data.

Special Data Services. Some examples of special data services are: Dun and Bradstreet's Market Identifiers, Nielsen's Retail Index, SAMI Warehouse Sales, the Nielsen Television Index, the Starch Advertisement Readership Service, the Simmons Media/Marketing Services, TRENDEX, the MRCA Consumer Panel, the National Family Opinion Panel, the Consumer Mail Panel, and Predicasts. While all of these are available at some cost to the user, they may be cost-effective for specific categories and for putting together components of the marketing strategy. Finally, there are published sources of archival data such as Moody's Manuals, the Rand McNally Commercial Atlas and Marketing Guide, and the World Almanac and Book of Facts. For further information, see Churchill (1976), which contains detailed descriptions of the special data sources plus short descriptions of thirty-seven published sources and a bibliography of additional published guides to archival data.

Archival data should be used with caution since it is collected for other purposes and may not exactly fit the category under investigation. But it is quickly obtained, may be less expensive, can lead to later efficiencies, and provides an external check to any qualitative or quantitative measurement. Although archival data may not meet all the managerial requirements, it is an important source to examine before primary measurement is undertaken.

Qualitative Measurement

New product development seeks to discover what the consumer views as important in a product category. Qualitative measurement is based on in-depth probes into the consumer's viewpoint. Its purpose is not to identify the best strategy, or to project demand, or even to select the most important product features. Instead, qualitative measurement raises issues by exploring the consumers' basic needs and desires. The qualitative researcher enters the process with an open mind, seeking to learn by simply listening to the consumer.

A primary method of qualitative research is focus group interviews. We presented this method in connection with idea generation in Chapter 6. Focus groups are also useful in the design process. For example, in focus groups for "Shared Ride Auto Transit"—a form of organized hitchhiking—the U.S. Department of Transportation (1977) confirmed its intuition about the importance of safety, dependability, reliability, flexibility, and personal freedom in consumers' reactions to various strategies. But they also uncovered some surprises. Major objections to "Shared Ride" were based on not wanting to be obligated or indebted to other people. Riders felt better paying, but drivers felt very uncomfortable in accepting payment. A number of consumer misunderstandings were uncovered, e.g., most consumers felt they paid higher insurance for carpooling when in fact they paid lower premiums. When Shared Ride was described as "community carpooling," there was better initial reaction and greater willingness to experiment. When Shared Ride was called "organized hitchhiking," however, consumers' attitudes immediately turned against the system.

An important function of qualitative research in the design process is to generate a list of attributes of products within the category. For example, Table 8.1 contains a list of twenty constructs which describe management education. This list forms the basis of the identification of consumer perceptions (Chapter 9). It is important that the list be as exhaustive as possible, covering a wide array of physical and psychological characteristics, if they are at all relevant to the category. Ideas come from the transcripts of the focus groups, individual in-depth interviews, previous studies, and prior managerial beliefs. The emphasis is on breadth, even if redundancy is inherent, because later analysis will identify the underlying structure. The fo-

Table 8.1. Twenty Constructs Which Describe Management Education

1. With a degree from this school, I'd be joining a world-wide "fraternity," an effective alumni network.
2. The program emphasizes training in skills that can be used in advising decision makers on what course of action to take.
3. The content of the program would be highly relevant to the decisions I expect to make in a management position in the next five years.
4. I would not be exposed to the newest, most advanced management techniques.
5. I'd be learning a common-sense approach to problem solving.
6. The school provides excellent teaching.
7. The school is oriented toward those who want to take personal responsibility for making major decisions.
8. The program is very theoretical, with limited "real-world" focus.
9. There would not be a high level of contact with faculty members.
10. The school has a "high-prestige" reputation.
11. Financial aid in the form of loans, grants, or assistantships is widely and easily available.
12. I would have a great deal of flexibility to structure a program to suit my own needs and interests.
13. The majority of faculty are academicians and have never been practicing managers.
14. The students are not very likely to be co-operative and friendly.
15. With a degree from this school, the most exciting job opportunities will be open to me upon graduation.
16. I could not go wrong with a degree from this program.
17. I would be able to command a very high relative starting salary with a degree from this school.
18. The program is very quantitative.
19. The school has an excellent location.
20. The school would emphasize how management is now conducted, not how it should be conducted.

cus group transcripts are used to word each statement in the semantics that the consumers use.

Qualitative research does not provide final answers. It is a useful search technique which helps insure that the quantitative measurements address the issues that are relevant to the design process.

Quantitative Measurement

This measurement provides the input to the analytic techniques used throughout the remaining chapters to identify which specific strategies make the greatest impact on improving the success of a new product design. Specific perceptions and preferences are measured and preliminary estimates of purchase actions are made.

First, archival and qualitative research are used to understand issues and semantics and then a quantitative approach is used to measure attitudes and consumer response. As the product design proceeds through evalua- tion and refinement, estimates must become more accurate and emphasis is almost exclusively on quantitative measurement.

Since we are concerned with new products, the product concept or prototype can be an experimental treatment in the research. Usually alterna- tives are presented and quantitative measures are taken. For example several "Stretching" concepts may have been generated and will be evalu- ated. But, in some cases an explicit experimental design is used to estimate response to product attributes or features.

Since quantitative measurement is often specific to the analyses used in the decision process, we defer some of the details to those sections that cover the specific analysis techniques. We turn now to sampling, and then to questionnaire formulation and attitude scaling.

SAMPLING

After the research method is decided on, sample sizes and sampling methods must be determined. In the qualitative phase small samples are taken. Two or three groups of ten people may be sufficient if issue identifi- cation and semantics are the primary concern. Later on, quantitative surveys will require larger sample sizes. It is uncommon to collect fewer than one hundred respondents; in cases where segmentation is important there should be 100 respondents in each major segment. The samples to support design of new products will be substantial, perhaps as large as 200–500. In fact, recent work by Srinivasan (1977) and Einhorn and Hogarth (1975) has shown that naive models which provide little diagnostic information may be indistinguishable from more sophisticated models when samples are small.

Although there are theoretical methods of defining the best sample size

(Schlaifer, 1969; Green and Tull, 1978; Allaire, 1975) based on the value of information, these are very difficult to implement in the complex sequential new product development process. Classical methods of considering the standard deviation of the resulting estimate are useful, but vastly over-sim- plify the problem, since information is collected in many variables and often analyzed by multivariate scaling methods for which sampling properties have not been fully determined. It appears that judgment, norms, and ex- perience are the best we can do at this time. Perhaps future research will provide more powerful and practical methods of determining the best sam- ple size for new product design.

In general, random samples are best if they can be obtained at a reason- able cost. They tend to be most representative and are less prone to sampling errors. But non-response can be a problem. If, as is usual, 30 to 40 percent of the random sample returns a mail questionnaire, the statistical analysis may be inappropriate unless it can be established that the nonrespondents are a random subgroup of the total sample. This requires that demographic and other characteristics be compared to external sources such as census figures, and corrections made if necessary.

Alternatively, purposive samples can be used if they are done carefully and steps are taken to statistically correct any biases introduced by the sam- pling (see Appendix 11.3). For example, the use of a shopping mall as a site for market research is becoming common. A respondent is stopped while walking in the mall and, by means of a few questions, qualified as having the desired target group characteristics. Quotas are established for age, sex, de- mographic, and product use groups. Although these samples are not ran- dom, response rates are high (over 60 percent), and their representativeness can be established through statistical corrections. These mall interviews are attractive if personal interviews and product or advertising exposure is es- sential. Nonetheless, great care is required in the selection of criteria for screening the respondents and careful statistical analysis. They should be scrutinized for any potential biases and these must be corrected.

Purposive samples can be attractive due to their reduced cost, but lower cost should be weighed against potential biases. A good rule of thumb is that purposive samples are more appropriate early in the design process when the primary goal is exploratory analysis. Later in the design process when forecasting becomes important, the representativeness of the sample is cru- cial and randomness becomes more important.

Do not confuse purposive samples with convenience samples. In pur- posive samples, explicit selection and screening processes are established, potential biases identified, and steps taken to correct for those biases. In convenience samples such as man-in-the-street, church groups, office friends, and university students biases can be hidden. Interpretation of any analyses done on such groups can lead to incorrect strategies for new prod- uct development. Thus, in general, we recommend using a random sample with checks for non-response, but consideration should be given to the ben- fits and costs of purposive surveys with statistical corrections.

MEASUREMENT INSTRUMENTS

When questionnaires are to be used in a sample, a choice must be made between personal, mail, and telephone interviews. In some cases this is not difficult since personal interviews are the only feasible solution. For example, if a food product is to be tasted, personal contact is required. In other cases, the format (mail, telephone, personal interview) depends on the information that is being collected. For example, for complex perception and preference questions personal interviews are best, but we have found the mail format represents an acceptable tradeoff when budgets are limited. The specifics of the questionnaire, the group to be interviewed, and the research budget must all be considered before a choice is made.

Questionnaire Design

A questionnaire must be carefully constructed to collect the appropriate information with a minimum of bias. Questionnaire design is an art. In this section we cover some representative considerations in questionnaire design and indicate some of the pitfalls to avoid.

Respondents must be motivated to participate. Convincing the respondents of the importance of the work is desirable. For example, a study of health services began with an explanation that the survey would measure health needs so that improved health services could be developed. Stressing the importance of each individual respondent's input is useful. In cases where cooperation may be low, personal interviews with personable interviewers can be effective. Increasingly, respondents are given compensation for their cooperation. For example, in a study of investors a hand held calculator was given each respondent. In a study of graduate students, each respondent was given a six-pack of imported beer. In consumer products a coupon worth two dollars may be given. The use of an incentive helps to increase the response rate, thereby reducing the damage of non-response bias, but non-financial motivations should not be overlooked.

Proper motivation can be used to reduce non-response bias. But a good response rate does not necessarily mean good measurement. Improperly worded questions can be misleading to the respondent, to the analyst, and to the manager. For example:

"Do you like the taste of calamari?"

In this case the respondent may not know that calamari is the Italian word for squid. The question would underestimate consumer appreciation.

"Do you agree that the Massachusetts Health Foundation provides excellent care?"

This one-sided question, although good for public relations, tends to bias the response toward agree. A better question would give both sides of the argument, i.e.:

"In your experience, does the Massachusetts Health Foundation provide excellent care or does it provide poor care?"

Alternatively, one of the attitude scaling techniques, which are described below, could be used. The pitfalls of question wording are numerous and can only be avoided through great care and careful testing of each question or set of questions. Both Payne (1951) and Oppenheim (1966) provide examples of many of these problems and how to overcome them. Payne provides an extensive list of problem words to avoid and a checklist of 100 points to consider before each questionnaire is taken to the field. Developing a good questionnaire can be costly and time consuming, but the rewards are great through more usable information and a better understanding of the consumer.

A good questionnaire requires careful planning, which should begin long before questions are actually written. In preparing a questionnaire it is important to recall the managerial questions that need to be answered, the analytic techniques to answer those questions, and the specific information that the techniques need. First, the major sections of the questionnaire should be specified. This block layout allows the new product design team to: (1) make rational tradeoffs about the length and the necessity of various sections, (2) ensure that all needed information is collected, (3) eliminate unnecessary redundancy, (4) construct a smooth flow of response throughout the questionnaire, and (5) check ordering requirements (e.g., preference valuation should come after attribute scales to avoid what are known as "halo effects"—Beckwith and Lehmann, 1976). For example, Table 8.2 is the block design for a questionnaire used by the City of Evanston, Il. to identify new transportation services. (See Hauser, Tybout, and Koppelman, 1979.) Note that each section has a specific purpose, and each section after the warm-up questions is specific to an analytic model. (The analytic methods are those described in subsequent chapters.)

After the block design is complete, focus groups and previous experience provide the input to word and reword the questions so that they accurately gather the information needed for the analysis. Small samples are used to pretest the questionnaire. Respondents are reinterviewed about their responses to be sure they were thinking of the same issues as the researcher when answering the questions. After the pretest and possibly preanalysis, the questionnaire is revised and implemented with a representative sample of the target population.

As we have said, questionnaire design is an art. Each reader should try to develop this skill by designing a questionnaire and having a colleague critique it. Examine it in light of the pitfalls described below. Everyone who uses market research should actually administer a questionnaire to some respondents at least once in order to understand the issues of non-response, ambiguity, and inaccuracy.

Some Pitfalls and How to Avoid Them

There is no simple formula for producing a good questionnaire. Instead we identify some of the common mistakes we have seen in question-

Table 8.2. Block Design for a Questionnaire to Investigate Consumer Views on Transportation Innovation

Block Description	Purpose	Analysis Technique*
1. Cover letter	Generate interest, motivate respondents	Motivation (8)
2. Warm-up questions	Gain rapport with consumer	Motivation (8)
3. Recent trip scenario sampling/Transportation choice for scenario	Representative sample of scenarios/Potential stratification by scenario	Benefit segmentation (10)
4. Instructions for rating transportation alternatives	Aid to response/Consider recent trip/Express *opinions*	Factor analysis (9)
5. Attribute scales for bus, walk, and car	Input to models of perception	Factor analysis (9)
6. Preference among available modes/ Frequency of use of all modes	Input to models of preference and choice behavior	Preference regression (10)/Logit analysis (11)
7. Self-reported travel characteristics	Input to models of choice/ Link to consumer attitudes	Logit analysis (11)
8. Stretching concepts for new modes/Attribute scales for stretching concepts	Enhance validity for changes in transportation system	Used with 4 and 5 above
9. Preference for available modes including stretching concepts	Estimate more complete models/Internal validation of preference models	Preference regression (10)
10. Conditional intent	Indicates behavior changes based upon changes in system characteristics	Intent model (11)
11. Importance ratings for the attribute scales	Alternative measure of preference	Importance model (10)
12. Transportation facts such as location of home, location of nearest bus stop, etc.	Enables measurement or estimation of benefits delivery	Purchase model (11)
13. Demographics	Personal descriptions for use in segmentation	Benefit segmentation (10)
14. Open-ended comments	Qualitative input for completeness	Qualitative input (8)

Numbers in parentheses indicate chapter in which technique is described.

naires designed by our students and by professional market researchers. Recognition of these pitfalls should help you avoid many of them. In addition, we give guidelines that we try to follow in developing our own questionnaires. Some of these guidelines may seem costly, such as a major pretest and preanalysis, but considering the stakes in new product development, we feel this cost is justified. Among the major pitfalls we have seen are use of the wrong semantics, low motivation, poor initial questions, difficult questions

to answer, products unfamiliar to the respondents, no pretest, no preanalysis, poor sampling, and under-budgeted marketing research.

Wrong Semantics. Since you are trying to measure consumers' responses, the questions must be phrased in the language which consumers usé. Rather than using the jargon of engineering, medicine, business, etc., use the language of the consumer. If a consumer talks about the time it takes to walk from his bus stop to the office, you do not ask, "What is the egress portion of your work trip via the bus mode?" If a consumer says his deodorant helps him stay "dry," you do not ask about "perspiration prevention." Rather than "minimization of propensity for cardiovascular infarction," you talk about "preventing heart attacks." A good way to discover the right semantics is through focus groups. Careful pretesting is necessary to see that respondents understand all words.

It is easy to write a biased question; difficult to write an unbiased one. While it is easy to ask, "Is the mayor doing a good job?," it is preferable to ask, "Is the mayor doing a good job, or a poor job?" A useful exercise is to ask yourself the reporter's five questions: "Who? Why? When? Where? and How?" It should be clear to the consumer which of these questions is being asked. If your question has more than one meaning, the consumer may well choose the wrong meaning. Consider Payne's example of the five-word question, "Why did you say that?" This simple question can have five different meanings, depending upon which word the consumer emphasizes in reading the question.

WHY did you say that?
Why DID you say that?
Why did YOU say that?
Why did you SAY that?
Why did you say THAT?

Without a pretest in which consumers read aloud the question, the semantics problem might well go unnoticed.

Low Motivation. It is important to the analysis that the consumer is involved with the questions and gives them the proper thought. Since poor responses are often indistinguishable from thoughtful responses, poor motivation brings ambiguity and inaccuracy. Specific questions must seem real and relevant; the questionnaire must flow smoothly and be interesting.

The credibility of the research firm and the anonymity (if appropriate) of the survey must be established rapidly. It is useful to tell the respondent what the study is about, why his inputs are crucial, how his name was selected, and how the results will be used.

Poor Initial Questions. It is tempting to start immediately with the most important questions, but it is better to begin with some simple warmup questions which will give the respondent confidence, allow the respondent to voice personal opinions, and lead smoothly into the more difficult or substantive questions of the survey. The warmup questions bring the respondents' frame of reference to the topic of the questionnaire.

Difficult Questions to Answer. How many questionnaires have you completed that require a magnifying glass to read, or have so many circles and arrows that you never know what question to answer, or have computer precoding right in the margin so that you feel like a punch card? All these characteristics have some benefits, but they must be used carefully and with much forethought. Reducing the print and eliminating white space gets more questions on a page and thus reduces the number of pages, but it may also reduce the response rate. Branching in a questionnaire directs the right questions to the right people, but it can get out of hand. "Office use only" computerese in the margin saves coding time, but the small savings in coding hardly seems worth the loss in respondent rapport.

Products Unfamiliar to the Respondents. There are over fifteen brands of deodorant on the market. Of these, how many could you seriously evaluate? In other words, how many: (1) have you used, (2) have on hand at home, (3) would you seriously consider using, or (4) would you definitely not use? Chances are that fewer than five brands of deodorant would pass any of the four criteria. In fact, in a study of over 200 consumers, Silk and Urban (1978) found that the average "evoked set" size was about three deodorants when "evoked set" was defined by the above criteria. If you ask consumers to evaluate products on the 15 to 30 attribute scales and you want these answers to be relevant, you must limit your questions to the evoked set. Alternatively, you can expand the evoked set by giving the consumer some detailed description, say a concept statement, of the product that is being evaluated. Ignoring evoked set limitations can cause erroneous interpretations and lead to inappropriate strategies. Note that for new product research all four criteria are important: "have used" to get experience, "have on hand at home" to get purchase and possibly consumption, "seriously consider" to get at dimensions the consumer considers important in that category, and "definitely not use" to uncover the bad features of a product in the category. This definition of the evoked set (due to Allaire, 1973) differs from the traditional definition (Howard and Sheth, 1969) by the inclusion of the fourth criterion. Inclusion of the fourth criterion can provide much additional information. Together these criteria ensure the evoked set gives the information that is necessary for proactive new product design.

No Pretest. No matter how much experience you have or how carefully you examine and re-examine questions, you can still misword or misdirect a question or set of questions. Perhaps the most important element in questionnaire design is pretest. No matter how carefully you design a questionnaire, it is probable that you will make at least a few mistakes. Pretest is in a sense a carefully monitored mini-study where you give your questionnaire to consumers in your target population and have them try to answer it.

A sample size of ten is common. After a question is answered, you can ask them what they thought it asked. You can try different forms of the question. You can watch for careless response or no response. You can ask a number of similar questions and check the internal consistency, or you can check the responses against your prior beliefs (Campbell and Fiske, 1959). You can do whatever is necessary to ensure that what you think is being asked is actually what is being answered. This step takes time and may delay a study, but without it you can never be confident that your measurement is reasonably unbiased.

No Preanalysis. Just as important as pretest is preanalysis where you try the analytic methods on the pretest data. Preanalysis ensures that you have included the right questions to address the issues. For example, in one questionnaire we measured frequency of purchase with a category for "5 or 6" purchases, but discovered through pretest data analysis that it was important to the analysis to distinguish between 5 times per month and 6 times per month. In another study we measured all the psychological characteristics of shopping centers, but had to construct an accessibility measure since it was not asked in the questionnaire. Preanalysis is not relevant to decision making since the sample is small, but it does help identify omitted data questions. If the results are interpretable within the small sample size limits, then you are ready for the full study; if not, then another iteration of the questionnaire may be necessary.

Poor Sampling. It is easy to hand out your questionnaire to anyone who will take it. You can increase your response rate if you have the respondent who does not want to answer your questionnaire pass it to someone who will. In transportation you have a captive audience if you do your survey on board a bus. An inexpensive way to reach consumers who buy color television is to have them fill out a questionnaire after they buy one of your television sets. You can poll your colleagues or your office staff, or you can intercept the man on the street. You can do all this, but don't treat the sample as random or representative of your target population. Although you can sometimes correct purposive sampling such as on-board surveys or point-of-purchase surveys, most of the models in this book are predicated on a random or stratified sample. Departure from randomness is sometimes done under extreme cost pressure, but methods of assuring representativeness must then be carefully considered.

Under-Budgeted Market Research. Not allowing enough funds for survey research can result in insufficient sample sizes or can result in mail surveys when personal interviews are recommended. Costs of field work vary by such factors as the incidence of a target group in a population, complexity of questions, callbacks, and screening, but for new product design personal interviews (45 minutes) usually will cost in the range of $40 to $70 per completed interview. Mail surveys cost less at $10 to $20 per completed response. Shopping mall intercepts are about $20 to $40 per response. A typical design study with personal interviews of 200 respondents should be budgeted at about $10,000 for the field work *alone*. Budgets for questionnaire formulation, analysis, report writing, and oral presentation bring the total for an average study to over $30,000. While this may seem high, it should be weighed against the benefits. For example, Chapter 3 estimated the average benefits due to front-end design as at least $1.5 million.

On the other hand, not all organizations can afford $30,000 for survey research. Often "in-kind" support can be substituted for cash outlays. For example, many hospitals use trained volunteers for telephone interviewing, mailing, and questionnaire coding. This "in-kind" support makes efficient use of otherwise underutilized resources. But organizations should carefully consider all cost-saving strategies and use them only when sufficient accuracy can be assured. A poorly done survey can often be worse strategically than no survey at all. If funds are extremely limited, they are better directed at qualitative research rather than casual quantitative research.

Summary. The pitfalls we have indicated should be avoided, but avoiding them does not guarantee a good questionnaire. We have found their avoidance a prerequisite for any questionnaires that we have used in new product design, but this short summary cannot replace a more complete discussion such as found in books on market research and/or questionnaire design. Before preparing a questionnaire, study what others have done, gain some firsthand experience, or use consultants with proven skill in questionnaire construction.

ATTITUDE SCALING

Much of the information collected in quantitative measurement is based on psychological scales. Such scales are used primarily to measure the attributes which are based on the constructs identified in the qualitative measurement, but they are also used to measure similarities between products, tradeoffs among attributes, preference among products, intent to purchase, propensity to innovate, and demographics. We now summarize some of the techniques that are particularly useful in measuring attitudes toward new products. The scaling of these measures and their use is discussed more completely in subsequent chapters.

Likert Scale. The most common form of scaling is to give the respondent a strongly worded statement about an attribute of a product and have him react to that statement on a five-point or seven-point agree/disagree scale. This is called a Likert type scale (see Figure 8.2a). The advantages of a Likert type scale are that it measures intensity of feeling about the statement, it is easy to administer, and consumers can respond to it easily. Its main disadvantage is that it measures attributes on an ordinal rather than on an internal scale. For example, in the scales in Figure 8.2a going from "neither agree nor disagree" to "agree" means the health service has higher quality, but we cannot infer that going from "neither agree nor disagree" to "strongly agree" means twice the improvement in quality. Nonetheless, in empirical experience the scales have proven rather robust with respect to

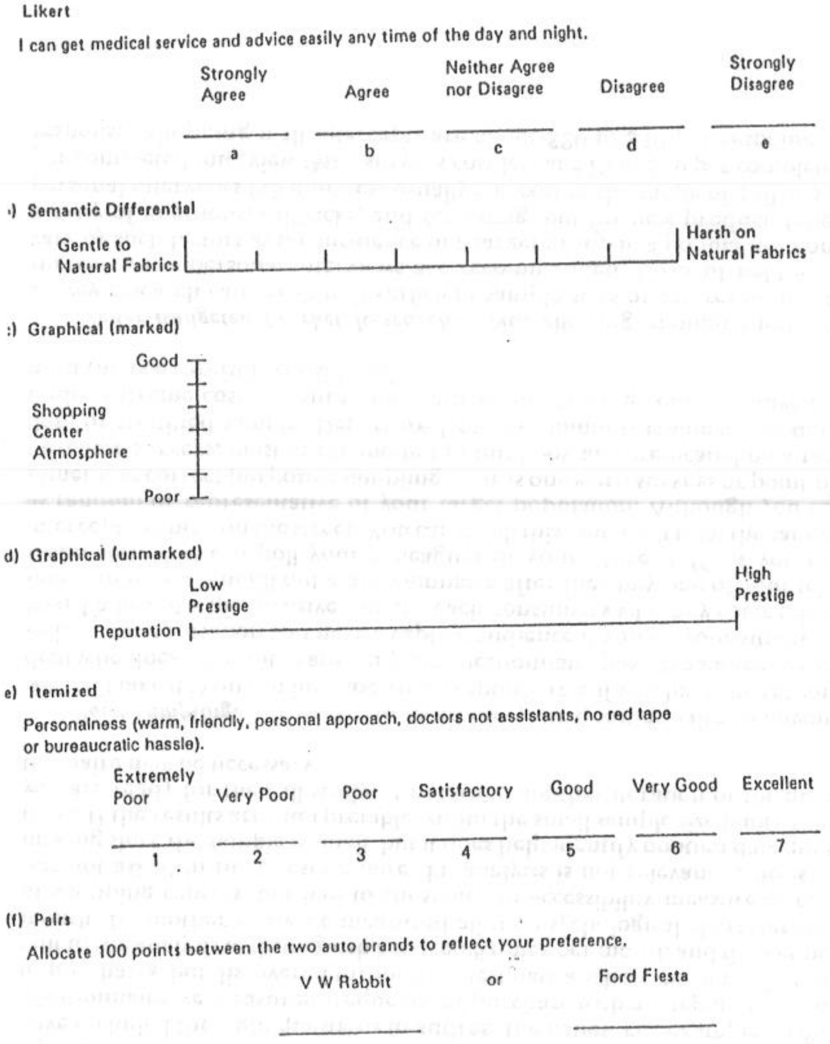
Likert
I can get medical service and advice easily any time of the day and night.
Strongly Agree
Agree
Neither Agree nor Disagree
Disagree
Strongly Disagree
a
b
c
d
e
) Semantic Differential
Gentle to Natural Fabrics
Harsh on Natural Fabrics
) Graphical (marked)
Good
Shopping Center Atmosphere
Poor
d) Graphical (unmarked)
Low Prestige
High Prestige
Reputation
e) Itemized
Personalness (warm, friendly, personal approach, doctors not assistants, no red tape or bureaucratic hassle).
Extremely Poor
Very Poor
Poor
Satisfactory
Good
Very Good
Excellent
1
2
3
4
5
6
7
(f) Pairs
Allocate 100 points between the two auto brands to reflect your preference.
V W Rabbit
or
Ford Fiesta

Figure 8.2. *Different Types of Attribute Scales*

the interval assumption; some manipulations (such as factor analysis and regression) can be performed if the analyst proceeds with caution.

Semantic Differential. In marketing, the most common form of a semantic differential scale is to give the respondent bipolar adjectives or phrases and have the respondent express his feelings about the product by checking a category to indicate how close his feelings are to one or the other of the phrases (see Figure 8.2b). Like the Likert scales, semantic differential scales measure intensity of feeling and are easy to administer or respond to. They can often be used interchangeably with Likert scales, but in some cases it is difficult, if not impossible, to generate the necessary bipolar adjectives or phrases.

Graphical. Rather than using categories, you can have the respondent react to a statement or to bipolar adjectives by indicating his strength of feeling as a position on a line. The line can be marked as in Figure 8.2c, or unmarked as in Figure 8.2d. If marked, the divisions can be few, as shown, or many as in a "thermometer scale." Most applications require that words be associated with at least the endpoints of the scale, although some applications, particularly those with only a few divisions, have been used with no anchor points. As with the Likert and semantic differential, these scales measure intensity of feeling and are easy to administer. Often the respondent finds them more difficult to answer, and unmarked or finely marked scales are difficult to encode for analysis. The interval properties of some of these scales may be slightly stronger than Likert or semantic differential, but not nearly as strong as might be inferred from the seemingly close relationship to the interval properties of a line. We cannot be assured that consumers react to graphical scales in a linear fashion.

Itemized. The itemized scale presents the respondent with an attribute description from which to select a category indicating his belief about how the product rates on that attribute (see Figure 8.2e). These scale questions also measure intensity of feeling and are easy to administer and answer. They do not allow the fine distinctions of graphical scales but are generally more reliable. They have only ordinal properties, but careful selection and testing of categories can get them closer to interval-like scales than either Likert, semantic differential, or graphical measures. Unfortunately, preparing the questions is difficult and tedious, and they require more space on the questionnaire than other scales.

Pairs. Paired comparisons can yield data that can be scaled to produce interval or ratio measures. The example in Figure 8f is called a constant sum comparison. Consumers are asked to allocate a fixed number of points between the two products to indicate their relative intensity of preference. If sufficient pairs are evaluated, a least squares procedure (Torgenson, 1958) or a linear programming procedure (Srinivasan and Shocker, 1973) can be used to develop an overall preference scale. For more details, see Hauser and Shugan (1980) or Huber and Sheluga (1977).

Other Scales. There are other scales used in psychology that have strong underlying theory, provide good tests of reliability and validity, and are similar in appearance to those we have discussed. Despite these properties, these scales are rarely used in studies which require consumers to rate many products on as many as 15 to 30 scales. They are not used because to achieve these properties each scale requires a major empirical effort. For example, the classical Thurstone scales require roughly 100 individuals to sort 100 to 200 items into 10 piles. Use of Thurstone scales can result in an exorbitant amount of money and effort spent on scaling rather than analysis or strategy. Guttman's scalogram analysis requires 5 to 7 statements and responses for every product on each attribute. Use of Guttman scales can transform a reasonable questionnaire into an exorbitantly long questionnaire.

Scaling. The process of turning scale measures into numerical values is called scaling. Chapters 9 and 10 consider analytic methods of scaling the attitude measures. These multidimensional scaling methods are extremely useful in defining product opportunities and consumer preferences.

SUMMARY

Consumer measurement provides key input to the design of new products. Careful consumer measurement enhances creativity, uncovers greater opportunities, leads to more accurate forecasts, and supports improved new product decision making. The guidelines presented in this chapter should be carefully adapted to the special needs of each particular study. Probably the best advice in consumer measurement is to proceed carefully and cautiously, continually critique the questionnaire, and pretest it on consumers. Seek advice when necessary and avoid making assumptions about how consumers will respond.

Good consumer measurement is difficult, but when done properly it is an extremely powerful tool for the design of new products. We provide more examples of measurement and scaling as we consider models of consumer perception, preference, and choice, and their interaction within the managerial evaluation and refinement process of new product design.

REVIEW QUESTIONS

8.1 What is the ultimate objective of consumer measurement?

8.2 Discuss the relationship between qualitative and quantitative measurement.

8.3 Generate a list of attributes for electric cars. For financial services. How would you scale these attributes?

8.4 What factors must be considered when selecting the sample size for a consumer study?

8.5 In consumer sampling, how is nonresponse a problem? How can nonresponse be minimized?

8.6 How can the manager measure and control the quality of information provided by a consumer with a questionnaire?

8.7 Why is preanalysis important when doing a consumer questionnaire study?

8.8 A company considering the marketing of a new financial service uses a *Fortune* magazine mailing list for sampling perspective buyers.. Could this procedure distort the conclusions which will be reached by the study? If so, how?

8.9 Suppose you were attempting to position a new type of resume service for your fellow students. Construct a questionnaire which attempts to measure the needed information.

8.10 You are introducing a new line of premium wines and want to measure how many consumers will try your product. Write a biased question that will overestimate demand. Write a biased question that will underestimate demand. Write a confusing question. Write a question that will accurately estimate demand.

Richard Jurek

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WHARTON REPROGRAPHICS

Mission Impossible

When I began doing market research, a senior researcher told me that finding information on private companies would be my most difficult challenge. He was not guilty of understatement. Private companies aren't required by law to publicly file disclosure statements, SEC-style documentation, or other information sources that a researcher regularly mines for competitor or business information. To top it off, most privately held companies are small or focused on particular industries, and they often aren't subject to major press coverage or industry profiles. Even print, proprietary online, and CD-ROM directories tend to offer only scant material on private companies.

Although reliable and detailed information sources on privately held companies are scarce, there are a number of ways to successfully integrate Internet research into your profiling. A key to finding good private company information on the Net is using focused and directed searches that are logically designed and tailored for both the company and the industry in question. The following are several tried and true methods I've used over the years.

RICHARD ELMER

YE OLDE HOME PAGE TRICK

Everyone's first instinct is to check a company's home page, where press releases, financial information, product details, CEO speeches, and the like are standard fare. Searching a company's Web site is indeed an excellent starting point.

Public company home pages are easy to find: Go to a stock quote page and enter the company's ticker symbol. Along with a quote, you'll get the company's latest news, a link with its SEC filings, and a link to the company's home page—assuming it has one.

Because private companies aren't listed on a stock exchange, it's a greater challenge to find a home page. You could try a search engine query on the company name, and if you're lucky you'll get a connection to the home page. But often you'll get a lot of hits that can take forever to follow.

First try to guess the URL. If the company has a name like "Lifeway Industries," try *www.lifeway.com* or *www.lifewayindustries.com*. If you strike out, don't panic. And don't waste your time trying any more name combinations than the obvious.

(Hint: Keep your eyes open at the next trade show you attend. Collect company brochures and business cards from the sales reps of some of the private companies. And make note of the home page addresses of your major competitors as well as other players in the industry, such as clients, suppliers, government agencies, and trade associations. Bookmark these pages and monitor them on a regular basis for new information.)

HOME-PAGE DIRECTORIES

A next logical step is to use one of the many business-specific directory search engines. One of my favorites is CompaniesOnline (*www.companiesonline.com*), a collaborative project of Dun & Bradstreet and Lycos that catalogs more than 60,000 public and private companies. A successful search on CompaniesOnline will reveal address and phone number, home page URL, the company's DUNS number (so you can order Dun & Bradstreet company reports), trade names, the industry in which the company is active, and ownership and management structure details. In exchange for your demographic info on their free registration form, you can access the company's annual sales, number of employees, contact names, titles, and e-mail addresses.

I tested CompaniesOnline with a listing of Chicago's top private companies published by Crain's Chicago Business. It yielded a 40 percent hit ratio—not a bad rate given the site's newness and the scarcity of private company information.

Another good site for finding company home pages is WhoWhere? (*companies.whowhere.com/org.html*). The site is slightly handicapped by the fact that it requires companies to register to be included in its searchable listing, but its database pool is expected to grow over time, and is well worth bookmarking.

ONE WAY TO FIND OUT ABOUT A COMPANY IS TO KNOW ABOUT ITS PRODUCTS.

INDUSTRY LISTINGS AND DIRECTORIES

If the company in question is large enough, a quick turn to the *Forbes* ranking of the top 500 privately held companies in the United States (*www.forbes.com*) should do the trick. If the firm is on the list, you'll get its national ranking as well as a short historical biography as it originally appeared in the magazine.

You also can try other industry-related directory or association pages that offer a list of member company home pages or other information. One such listing is the Associations Directory at *www.asaenet.org/gateway/onlineassoclist.html.*

THE PRODUCT APPROACH

Another way to find out about a company is to know as much as possible about its products. If you can find a reference to the product, you often can find a reference to the company.

The Thomas Register of American Manufacturers (*www.thomasregister.com/index.html*) gives company, product, and home page information on more than 155,000 private and public manufacturing companies in the United States. If the company isn't in the Thomas Register, you can search for product or registered trademark names via your favorite search engine. I prefer Infoseek (*www.infoseek.com*) because it allows you to search the results of your previous search—saving you considerable time in weeding through the good and bad hits.

You also can search the newsgroup areas, using a search engine such as Deja News (*www.dejanews.com*) and perhaps a filter option to limit the number of hits. I find newsgroups extremely helpful when researching a company's product performance—more so than researching the company itself, particularly on the high-tech side where user forums reveal any number of design flaws or product launch surprises.

For technical details of a company's products, a patent search at the U.S. Government Patent Office (*patents.cnidr.org/access/access.html*) is the next best thing private company researchers have to the SEC Edgar site. It's a must-search site for those in manufacturing and engineering.

Like many others, I'm hesitant to spend money before I've exhausted all the free options. If the above methods don't yield much, I have no problem digging into my pocket for good, reliable information. One of the best sources is Dun & Bradstreet (*www.dnb.com*), which offers a variety of pricing packages. A sample report on a hard-to-find private firm revealed the company's financial condition, history, location, contact information, executive biographies, recent lawsuits, and other financial details such as annual sales figures and payment history with vendors.

The Net also can help you with traditional paper-based sleuthing. The Washington Researchers Group, a market research and competitive intelligence company, has a helpful checklist of information sources at *ftp.clark.net/pub/busintel/premium-private.html.* Check it out—there are more than a few good gems among the list that will get you thinking and on the right track. ■

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2

Generic Competitive Strategies

Chapter 1 described competitive strategy as taking offensive or defensive actions to create a defendable position in an industry, to cope successfully with the five competitive forces and thereby yield a superior return on investment for the firm. Firms have discovered many different approaches to this end, and the best strategy for a given firm is ultimately a unique construction reflecting its particular circumstances. However, at the broadest level we can identify three internally consistent generic strategies (which can be used singly or in combination) for creating such a defendable position in the long run and outperforming competitors in an industry. This chapter describes the generic strategies and explores some of the requirements and risks of each. Its purpose is to develop some introductory concepts that can be built upon in subsequent analysis. Succeeding chapters of this book will have much more to say about how to translate these broad generic strategies into more specific strategies in particular kinds of industry situations.

Three Generic Strategies

In coping with the five competitive forces, there are three potentially successful generic strategic approaches to outperforming other firms in an industry:

1. overall cost leadership
2. differentiation
3. focus.

Sometimes the firm can successfully pursue more than one approach as its primary target, though this is rarely possible as will be discussed further. Effectively implementing any of these generic strategies usually requires total commitment and supporting organizational arrangements that are diluted if there is more than one primary target. The generic strategies are approaches to outperforming competitors in the industry; in some industries structure will mean that all firms can earn high returns, whereas in others, success with one of the generic strategies may be necessary just to obtain acceptable returns in an absolute sense.

OVERALL COST LEADERSHIP

The first strategy, an increasingly common one in the 1970s because of popularization of the experience curve concept, is to achieve overall cost leadership in an industry through a set of functional policies aimed at this basic objective. Cost leadership requires aggressive construction of efficient-scale facilities, vigorous pursuit of cost reductions from experience, tight cost and overhead control, avoidance of marginal customer accounts, and cost minimization in areas like R&D, service, sales force, advertising, and so on. A great deal of managerial attention to cost control is necessary to achieve these aims. Low cost relative to competitors becomes the theme running through the entire strategy, though quality, service, and other areas cannot be ignored.

Having a low-cost position yields the firm above-average returns in its industry despite the presence of strong competitive forces. Its cost position gives the firm a defense against rivalry from

WHARTON REPROGRAPHICS

competitors, because its lower costs mean that it can still earn returns after its competitors have competed away their profits through rivalry. A low-cost position defends the firm against powerful buyers because buyers can exert power only to drive down prices to the level of the next most efficient competitor. Low cost provides a defense against powerful suppliers by providing more flexibility to cope with input cost increases. The factors that lead to a low-cost position usually also provide substantial entry barriers in terms of scale economies or cost advantages. Finally, a low-cost position usually places the firm in a favorable position vis-à-vis substitutes relative to its competitors in the industry. Thus a low-cost position protects the firm against all five competitive forces because bargaining can only continue to erode profits until those of the next most efficient competitor are eliminated, and because the less efficient competitors will suffer first in the face of competitive pressures.

Achieving a low overall cost position often requires a high relative market share or other advantages, such as favorable access to raw materials. It may well require designing products for ease in manufacturing, maintaining a wide line of related products to spread costs, and serving all major customer groups in order to build volume. In turn, implementing the low-cost strategy may require heavy up-front capital investment in state-of-the art equipment, aggressive pricing, and start-up losses to build market share. High market share may in turn allow economies in purchasing which lower costs even further. Once achieved, the low-cost position provides high margins which can be reinvested in new equipment and modern facilities in order to maintain cost leadership. Such reinvestment may well be a prerequisite to sustaining a low-cost position.

The cost leadership strategy seems to be the cornerstone of Briggs and Stratton's success in small horsepower gasoline engines, where it holds a 50 percent worldwide share, and Lincoln Electric's success in arc welding equipment and supplies. Other firms known for successful application of cost leadership strategies to a number of businesses are Emerson Electric, Texas Instruments, Black and Decker, and Du Pont.

A cost leadership strategy can sometimes revolutionize an industry in which the historical bases of competition have been otherwise and competitors are ill-prepared either perceptually or economically to take the steps necessary for cost minimization. Harnischfeger is in the midst of a daring attempt to revolutionize the rough-terrain crane industry in 1979. Starting from a 15 percent market share, Harnischfeger redesigned its cranes for easy manufacture and service using modularized components, configuration changes, and reduced material content. It then established subassembly areas and a conveyorized assembly line, a notable departure from industry norms. It ordered parts in large volumes to save costs. All this allowed the company to offer an acceptable quality product and drop prices by 15 percent. Harnischfeger's market share has grown rapidly to 25 percent and is continuing to grow. Says Willis Fisher, general manager of Harnischfeger's Hydraulic Equipment Division:

> We didn't set out to develop a machine significantly better than anyone else but we did want to develop one that was truly simple to manufacture and was priced, intentionally, as a low cost machine.[1]

Competitors are grumbling that Harnischfeger has "bought" market share with lower margins, a charge that the company denies.

DIFFERENTIATION

The second generic strategy is one of differentiating the product or service offering of the firm, creating something that is perceived *industrywide* as being unique. Approaches to differentiating can take many forms: design or brand image (Fieldcrest in top of the line towels and linens; Mercedes in automobiles), technology (Hyster in lift trucks; MacIntosh in stereo components; Coleman in camping equipment), features (Jenn-Air in electric ranges); customer service (Crown Cork and Seal in metal cans), dealer network (Caterpillar Tractor in construction equipment), or other dimensions. Ideally, the firm differentiates itself along several dimensions. Caterpillar Tractor, for example, is known not only for its dealer network and excellent spare parts availability but also for its extremely high-quality durable products, all of which are crucial in heavy equipment where downtime is very expensive. It should be stressed that the differentiation strategy does not allow the firm to ignore costs, but rather they are not the primary strategic target.

Differentiation, if achieved, is a viable strategy for earning above-average returns in an industry because it creates a defensible position for coping with the five competitive forces, albeit in a different way than cost leadership. Differentiation provides insulation against competitive rivalry because of brand loyalty by customers and resulting lower sensitivity to price. It also increases margins, which avoids the need for a low-cost position. The resulting customer loyalty and the need for a competitor to overcome uniqueness provide entry barriers. Differentiation yields higher margins with which to deal with supplier power, and it clearly mitigates buyer power, since buyers lack comparable alternatives and are thereby less price sensitive. Finally, the firm that has differentiated itself to achieve customer loyalty should be better positioned vis-à-vis substitutes than its competitors.

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[1] "Harnischfeger's Dramatic Pickup in Cranes," *Business Week*, August 13, 1979.

Achieving differentiation may sometimes preclude gaining a high market share. It often requires a perception of exclusivity, which is incompatible with high market share. More commonly, however, achieving differentiation will imply a trade-off with cost position if the activities required in creating it are inherently costly, such as extensive research, product design, high quality materials, or intensive customer support. Whereas customers industrywide acknowledge the superiority of the firm, not all customers will be willing or able to pay the required higher prices (though most are in industries like earthmoving equipment where despite high prices Caterpillar has a dominant market share). In other businesses, differentiation may not be incompatible with relatively low costs and comparable prices to those of competitors.

FOCUS

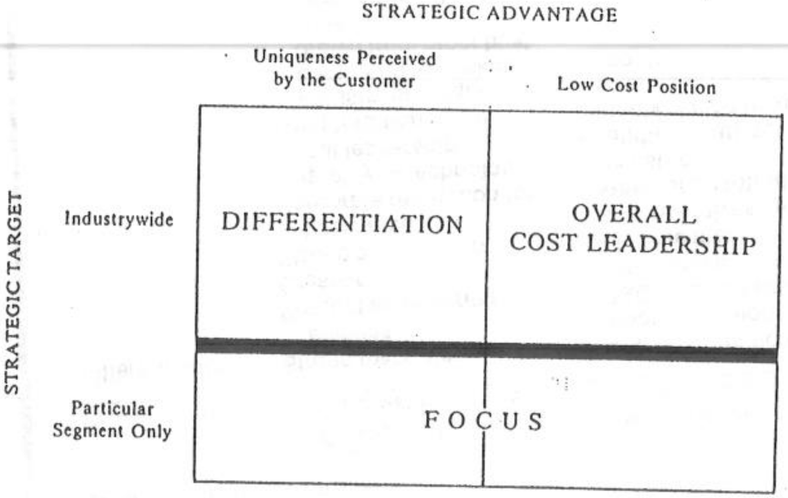
The final generic strategy is focusing on a particular buyer group, segment of the product line, or geographic market; as with differentiation, focus may take many forms. Although the low cost and differentiation strategies are aimed at achieving their objectives industrywide, the entire focus strategy is built around serving a particular target very well, and each functional policy is developed with this in mind. The strategy rests on the premise that the firm is thus able to serve its narrow strategic target more effectively or efficiently than competitors who are competing more broadly. As a result, the firm achieves either differentiation from better meeting the needs of the particular target, or lower costs in serving this target, or both. Even though the focus strategy does not achieve low cost or differentiation from the perspective of the market as a whole, it does achieve

one or both of these positions vis-à-vis its narrow market target. The difference among the three generic strategies are illustrated in figure 2-1.

The firm achieving focus may also potentially earn above-average returns for its industry. Its focus means that the firm either has a low cost position with its strategic target, high differentiation, or both. As we have discussed in the context of cost leadership and differentiation, these positions provide defenses against each competitive force. Focus may also be used to select targets least vulnerable to substitutes or where competitors are the weakest.

For example, Illinois Tool Works has focused on specialty markets for fasteners where it can design products for particular buyer needs and create switching costs. Although many buyers are uninterested in these services, some are. Fort Howard Paper focuses on a narrow range of industrial-grade papers, avoiding consumer products vulnerable to advertising battles and rapid introductions of new products. Porter Paint focuses on the professional painter rather than the do-it-yourself market, building its strategy around serving the professional through free paint-matching services, rapid delivery of as little as a gallon of needed paint to the worksite, and free coffee rooms designed to provide a home for professional painters at factory stores. An example of a focus strategy that achieves a low-cost

FIGURE 2-1. Three Generic Strategies



position in serving its particular target is seen in Martin-Brower, tl third largest food distributor in the United States. Martin-Brow has reduced its customer list to just eight leading fast-food chain Its entire strategy is based on meeting the specialized needs of tl customers, stocking only their narrow product lines, order takin procedures geared to their purchasing cycles, locating warehous based on their locations, and intensely controlling and computeri ing record keeping. Although Martin-Brower is not the low-cost di tributor in serving the market as a whole, it is in serving its particula segment. Martin-Brower has been rewarded with rapid growth an above-average profitability.

The focus strategy always implies some limitations on the overall market share achievable. Focus necessarily involves a trade-of between profitability and sales volume. Like the differentiate strategy, it may or may not involve a trade-off with overall cost position.

OTHER REQUIREMENTS OF THE GENERIC STRATEGIES

The three generic strategies differ in dimensions other than the functional differences noted above. Implementing them successfully requires different resources and skills. The generic strategies also imply differing organizational arrangements, control procedures, and inventive systems. As a result, sustained commitment to one of the strategies as the primary target is usually necessary to achieve success. Some common implications of the generic strategies in these areas are as follows:

GENERIC STRATEGY	COMMONLY REQUIRED SKILLS AND RESOURCES	COMMON ORGANIZATIONAL REQUIREMENTS
Overall Cost Leadership	Substained capital investment and access to capital Process engineering skills Intense supervision of labor Products designed for ease in manufacture Low-cost distribution system	Tight cost control Frequent, detailed control reports Structured organization and responsibilities Incentives based on meeting strict quantitative targets
Differentiation	Strong marketing abilities Product engineering Creative flair Strong capability in basic research Corporate reputation for quality or technological leadership Long tradition in the industry or unique combination of skills drawn from other businesses Strong cooperation from channels	Strong coordination among functions in R&D, product development, and marketing Subjective measurement and incentives instead of quantitative measures Amenities to attract highly skilled labor, scientists, or creative people
Focus	Combination of the above policies directed at the particular strategic target	Combination of the above policies directed at the particular strategic target

The generic strategies may also require different styles of leadership and can translate into very different corporate cultures and atmospheres. Different sorts of people will be attracted.

Stuck in the Middle

The three generic strategies are alternative, viable approaches to dealing with the competitive forces. The converse of the previous discussion is that the firm failing to develop its strategy in at least one of the three directions—a firm that is "stuck in the middle"—is in an extremely poor strategic situation. This firm lacks the market share, capital investment, and resolve to play the low-cost game, the industrywide differentiation necessary to obviate the need for a low-cost position, or the focus to create differentiation or a low-cost position in a more limited sphere.

The firm stuck in the middle is almost guaranteed low profitability. It either loses the high-volume customers who demand low prices or must bid away its profits to get this business away from low-cost firms. Yet it also loses high-margin businesses—the cream—to the firms who are focused on high-margin targets or have achieved differentiation overall. The firm stuck in the middle also probably suffers from a blurred corporate culture and a conflicting set of organizational arrangements and motivation system.

Clark Equipment may well be stuck in the middle in the lift truck industry in which it has the leading overall U.S. and worldwide market share. Two Japanese producers, Toyota and Komatsu, have adopted strategies of serving only the high-volume segments, minimized production costs, and rock-bottom prices, also taking advantage of lower Japanese steel prices, which more than offset transportation costs. Clark's greater worldwide share (18 percent; 33 percent in the United States) does not give it clear cost leadership given its very wide product line and lack of low-cost orientation. Yet with its wide line and lack of full emphasis to technology Clark has been unable to achieve the technological reputation and product differentiation of Hyster, which has focused on larger lift trucks and spent aggressively on R&D. As a result, Clark's returns appear to be significantly lower than Hyster's, and Clark has been losing ground.[3]

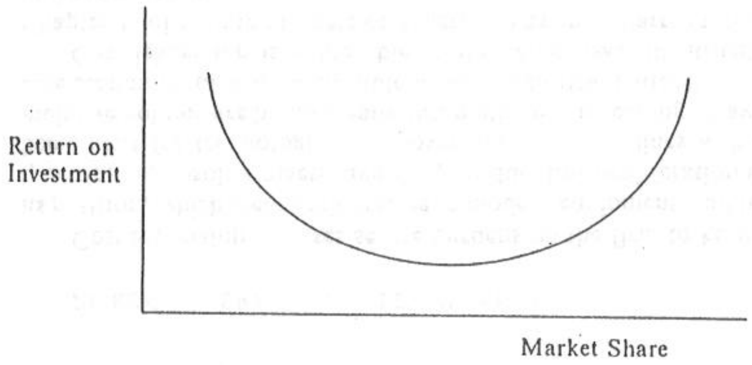
The firm stuck in the middle must make a fundamental strategic decision. Either it must take the steps necessary to achieve cost leadership or at least cost parity, which usually involve aggressive investments to modernize and perhaps the necessity to buy market share, or it must orient itself to a particular target (focus) or achieve some uniqueness (differentiation). The latter two options may well involve shrinking in market share and even in absolute sales. The choice among these options is necessarily based on the firm's capabilities and limitations. Successfully executing each generic strategy involves different resources, strengths, organizational arrangements, and managerial style, as has been discussed. Rarely is a firm suited for all three.

Once stuck in the middle, it usually takes time and sustained effort to extricate the firm from this unenviable position. Yet there seems to be a tendency for firms in difficulty to flip back and forth over time among the generic strategies. Given the potential inconsistencies involved in pursuing these three strategies, such an approach is almost always doomed to failure.

These concepts suggest a number of possible relationships between market share and profitability. In some industries, the problem of getting caught in the middle may mean that the smaller (focused or differentiated) firms and the largest (cost leadership) firms are the most profitable, and the medium-sized firms are the least profitable. This implies a U-shaped relationship between profitability and market share, as shown in Figure 2-2. The relationship in Figure 2-2 appears to hold in the U.S. fractional horsepower electric motor business, There GE and Emerson have large market shares and strong cost positions, GE also having a strong technological reputation. Both are believed to earn high returns in motors. Baldor and Gould (Century) have adopted focused strategies, Baldor oriented toward the distributor channel and Gould toward particular customer segments. The profitability of both is also believed to be good. Franklin is in an intermediate position, with neither low cost nor focus. Its performance in motors is believed to follow accordingly. Such a U-shaped relationship probably also roughly holds in the automobile industry when viewed on a global basis, with firms like GM (low cost) and Mercedes (differentiate) the profit leaders. Chrysler, British Leyland, and Fiat lack cost position, differentiation, or focus—they are stuck in the middle.

However, the U-shaped relationship in Figure 2-2 does not hold in every industry. In some industries, there are no opportunities for focus or differentiation—it's solely a cost game—and this is true in a number of bulk commodities. In other industries, cost is relatively unimportant because of buyer and product characteristics. In these kinds of industries there is often an inverse relationship between market share and profitability. In still other industries, competition is so intense that the only way to achieve an above-average return is

FIGURE 2-2



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[3]See Wertheim (1977).

through focus or differentiation—which seems to be true in the U.S. steel industry. Finally, low overall cost position may not be incompatible with differentiation or focus, or low cost may be achievable without high share. For an example of the complex combinations that can result, Hyster is number two in lift trucks but is more profitable than several of the smaller producers in the industry (Allis-Chalmers, Eaton) who do not have the share to achieve either low costs or enough product differentiation to offset their cost position.

There is *no single relationship* between profitability and market share, unless one conveniently defines the market so that focused or differentiated firms are assigned high market shares in some narrowly defined industries and the industry definitions of cost leadership firms are allowed to stay broad (they must because cost leaders often do not have the largest share in every submarket). Even shifting industry definition cannot explain the high returns of firms who have achieved differentiation industrywide and hold market shares below that of the industry leader.

Most importantly, however, shifting the way the industry is defined from firm to firm begs the question of deciding which of the three generic strategies is appropriate for the firm. This choice rests on picking the strategy best suited to the firm's strengths and one least replicable by competitors. The principles of structural analysis should illuminate the choice, as well as allow the analyst to explain or predict the relationship between share and profitability in any particular industry. I will discuss this issue further in Chapter 7, where structural analysis is extended to consider the differing positions of firms within a particular industry.

Risks of the Generic Strategies

Fundamentally, the risks in pursuing the generic strategies are two: first, failing to attain or sustain the strategy; second, for the value of the strategic advantage provided by the strategy to erode with industry evolution. More narrowly, the three strategies are predicated on erecting differing kinds of defenses against the competitive forces, and not surprisingly they involve differing types of risks. It is important to make these risks explicit in order to improve the firm's choice among the three alternatives.

RISKS OF OVERALL COST LEADERSHIP

Cost leadership imposes severe burdens on the firm to keep up its position, which means reinvesting in modern equipment, ruthlessly scrapping obsolete assets, avoiding product line proliferation and being alert for technological improvements. Cost declines with cumulative volume are by no means automatic, nor is reaping all available economies of scale achievable without significant attention.

Cost leadership is vulnerable to the same risks, identified in Chapter 1, of relying on scale or experience as entry barriers. Some of these risks are

- technological change that nullifies past investments or learning;
- low-cost learning by industry newcomers or followers, through imitation or through their ability to invest in state-of-the-art facilities;
- inability to see required product or marketing change because of the attention placed on cost;
- inflation in costs that narrow the firm's ability to maintain enough of a price differential to offset competitors' brand images or other approaches to differentiation.

The classic example of the risks of cost leadership is the Ford Motor Company of the 1920s. Ford had achieved unchallenged cost leadership through limitation of models and varieties, aggressive backward integration, highly automated facilities, and aggressive pursuit of lower costs through learning. Learning was facilitated by the lack of model changes. Yet as incomes rose and many buyers had already purchased a car and were considering their second, the market began to place more of a premium on styling, model changes, comfort, and closed rather than open cars. Customers were willing to pay a price premium to get such features. General Motors stood ready to capitalize on this development with a full line of models. Ford faced enormous costs of strategic readjustment given the rigidities created by heavy investments in cost minimization of an obsolete model.

Another example of the risks of cost leadership as a sole focus is provided by Sharp in consumer electronics. Sharp, which has long followed a cost leadership strategy, has been forced to begin an aggressive campaign to develop brand recognition. Its ability to sufficiently undercut Sony's and Panasonic's prices was eroded by cost increases and U.S. antidumping legislation, and its strategic position was deteriorating through sole concentration on cost leadership.

RISKS OF DIFFERENTIATION

Differentiation also involves a series of risks:

- the cost differential between low-cost competitors and the differentiated firm becomes too great for differentiation to hold brand loyalty. Buyers thus sacrifice some of the features, services, or image possessed by the differentiated firm for large cost savings;
- buyers' need for the differentiating factor falls. This can occur as buyers become more sophisticated;
- imitation narrows perceived differentiation, a common occurrence as industries mature.

The first risk is so important as to be worthy of further comment. A firm may achieve differentiation, yet this differentiation will usually sustain only so much of a price differential. Thus if a differentiated firm gets too far behind in cost due to technological change or simply inattention, the low cost firm may be in a position to make major inroads. For example, Kawasaki and other Japanese motorcycle producers have been able to successfully attack differentiated producers such as Harley-Davidson and Triumph in large motorcycles by offering major cost savings to buyers.

RISKS OF FOCUS

Focus involves yet another set of risks:

- the cost differential between broad-range competitors and the focused firm widens to eliminate the cost advantages of serving a narrow target or to offset the differentiation achieved by focus;
- the differences in desired products or services between the strategic target and the market as a whole narrows;
- competitors find submarkets *within* the strategic target and outfocus the focuser.

Chapter 9

Perceptual Mapping: Consumers' Perceptions of New and Existing Products

You will recall that the design is made up of a target group specification, core benefit proposition (CBP), a product positioning versus the competition, physical characteristics to fulfill the CBP, and a price, advertising, and distribution strategy. In this chapter we address how a manager can identify the perceptual component of the CBP. Succeeding chapters in Part III discuss how to position the product relative to competition, forecast sales potential, select the physical characteristics to realize that position, and orchestrate the marketing mix based on the CBP.

PERCEPTUAL POSITIONING

On any day when you turn on the TV, read the newspaper, or pick up a magazine, you will find many claims. Television tells us that SURE deodorant "goes on dry, keeps you dry," that AVON's Emprise perfume is "dazzling, rich, elegant, and gorgeous," that LIFESAVERS "has a great flavor, has been around for years, and is a part of living," that NORTHERN toilet tissue is "strong and soft—stroft," that KRAFT French dressing is "smooth, spicy, all-American, and has 100 percent natural flavors," that IVORY soap gives you that "clean, fresh feeling of clean," that GLAD bags are "strong and thick, with lots of room." Turning off the television set, you open the *Chicago Tribune* to learn that O'CONNOR & GOLDBERG's shoes are "young, sophisticated, citified," that WATER TOWER PLACE gives you the "ultimate in individuality and elegance," and that KORVETTE's L.E.D. digital watch is "good-looking, accurate, and efficient."

WHARTON REPROGRAPHICS

The Wall Street Journal's ads point out SAVIN copies cost less than XEROX, that 3 M's Secretary Two can do "eight things your current copier probably cannot do." The *New York Times'* ads say "Fly the friendly skies of UNITED" and "AMERICAN is the line for professionals." Having digested the local and national news, you may open *Newsweek* or *Time* to find that ZENITH gives you the "best picture and fewest repairs," you ponder why VOLVO, "with a reputation for being so safe, goes so fast," you discover that POLAROID's SX-70 film gives you "more beautiful, super clear pictures," your mouth waters for the "rare taste, as you like it" of J&B RARE SCOTCH, and you discover that the Chevy CITATION is "compact, but big inside, versatile, but sporty too, and quick, but also very smooth." Finally, you open a trade journal for information on mining equipment to find that General Motors' TEREX haulers provide "teamwork, a full load in the right number of passes," that CATERPILLAR offers "a unique system that goes that all important extra mile to provide you with services and programs not generally offered by other material handling equipment dealers," that American-Standard WABCO makes the "largest production mining truck in the world," that EIMCO provides "better productivity with less investment," and that INTERNATIONAL HARVESTER is "flexible enough and cares enough to make a machine that fills your special need."

These advertising claims reflect the careful efforts of these organizations not only to portray the benefits they offer consumers (CBP), but to differentiate themselves from their competition. This differentiation is achieved by uniquely positioning their products. For example, SURE positions itself as "drier than other deodorants." Other deodorants position themselves as being "more effective" or "longer lasting." In office copiers, 3M is positioned around "versatility" while others are positioned for "lower costs."

These positioning issues are critical for a new product. Not only must a product have a good CBP, but it must also be positioned differently from the competition. For example, although the CBP of dryness in a deodorant is good, a new product would be unlikely to succeed with this CBP alone if it is positioned in the same place as an existing product. A proven way for a new product to fail is by not surpassing existing products. In many markets, there is little room for a parity product.

In computers, IBM has developed a positioning based on using computers to solve management problems. RCA tried to compete with IBM with hardware similar to IBM's but at a lower price. This was unsuccessful and RCA's positioning was poor against IBM. IBM had a much better preception for delivering useful results and managers did not weigh cost as heavily as problem solving in buying a computer. CBP's and their positioning against existing products must be carefully understood when designing a new product.

Good positioning requires that we understand the dimensions used by consumers to perceive our new product and how existing products are placed on these dimensions. We must know the number of dimensions, the names of those dimensions, where the competition is positioned, and where there are gaps for a new product to fill. Then we must know how to put together product and promotion to ensure that consumers perceive the new product as it was planned. How to identify the perceptual dimensions used by consumers and the product positioning opportunities in a market is the subject of this chapter. Our approach to product positioning is through perceptual maps. We provide some comprehensive examples of perceptual maps and discuss analytic methods for deriving these maps. The chapter closes with a review of the managerial use of perceptual maps.

PERCEPTUAL MAPS

Some Examples

Perceptual maps represent the positions of products on a set of evaluative dimensions. Figure 9.1 shows a perceptual map for pain relievers. The two dimensions are "effectiveness" and "gentleness." "Effectiveness" reflects attributes of strong, fast, long-lasting relief and the ability to make headache pain go away fast. "Gentleness" represents perceptions that the product would not upset one's stomach or cause heartburn. Excedrin is positioned as the most effective relative to the other brands, while Tylenol is the most gentle. There appears to be a positioning opportunity for a CBP of gentleness and effectiveness. If a product could be created that would have the

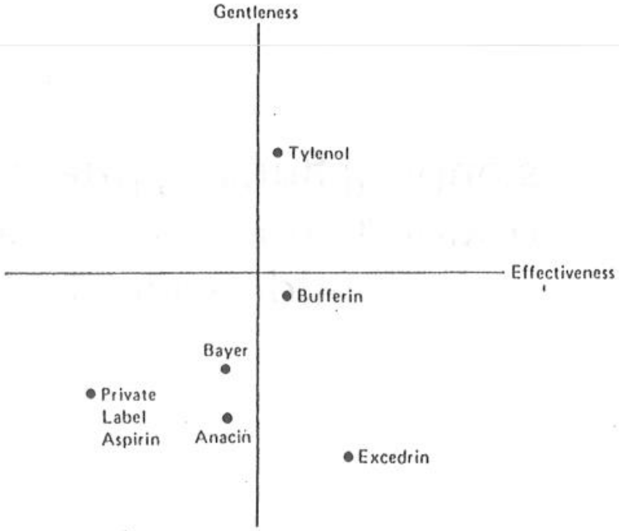


Figure 9.1. *Perceptual Map of Pain Relievers*

effectiveness of Excedrin and the gentleness of Tylenol, a unique positioning could be achieved.

Perceptual mapping is not restricted to frequently purchased consumer goods. Services and industrial products can be represented in this way also. Figure 9.2 shows consumer perceptions of transportation services. Quickness and convenience reflect the ability of a mode of travel to provide on-time service that gets consumers quickly to their destinations with no long wait, is available when needed, and allows consumers to come and go as they wish. Ease of travel includes correct temperature, no problems in bad weather, little effort needed, not tiring, and easy to carry packages or travel with children. Psychological comfort includes attributes such as relaxing, no worry about assault or injury, and not made uncomfortable or annoyed by others.

If you were a transit manager or community planner trying to increase utilization of public transportation, Figure 9.2 suggests that you would need to drastically improve consumers' perceptions of public transportation with respect to both ease of travel and quickness and convenience. You might try to modify the existing bus system or introduce a new type of service that is quicker, more convenient, and easier to use.

Product positioning for industrial products is illustrated in a study by Choffray and Lilien (1978); the new products evaluated were solar-powered systems. Table 9.1 shows the product attributes associated with each of two underlying perceptual dimensions for industrial air-conditioning systems, by corporate engineers. The first factor is "risk," and the second factor is "benefits" of the system. In industrial buying, more than one person is usually involved. Choffray and Lilien found different participants in the decision had different numbers of dimensions, and these dimensions were made up of different compositions of the product attributes. Table 9.2 shows the

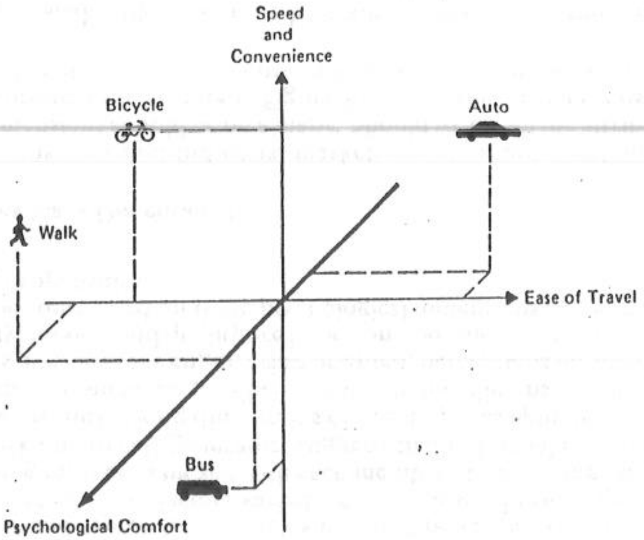


Figure 9.2. *Perceptual Map of Transportation Services (adapted from Hauser and Wisniewski, 1979)*

Table 9.1. **Product Attributes Associated with Underlying Perceptual Dimensions of Air-Conditioning Systems**[a]

	Dimension A, "Risk"	*Dimension B, "Benefits"*
Corporate Engineers	Reliability Field Tested First Cost Noise Level	Reduced Pollution Energy Savings Protection Moderness

[a] *Choffray and Lilien, (1978), p. 220*

Table 9.2. **Perceptual Dimensions of Air-Conditioning Systems by Participants in the Buying Decision**[a]

	Dimension A	*Dimension B*	*Dimension C*
Plant Managers	*"Benefits"* Energy Savings/ Protection Moderness Low Operating Cost	*"Risk"* Reliability/ Field Tested Modularity Noise Level	
Production Engineers	*"Benefits"* Energy Savings/ Protection Low Operating Cost Moderness Reduced Pollution	*"Noise"* Noise Level Modularity	*"Risk"* Complexity Field Tested/ Reliability
Top Managers	*"Benefits"* Energy Savings/ Protection Low Operating Cost Moderness Protection against Power Failure	*"Risk"* Reliability/ Field Tested Initial Cost Complexity	*"Noise"* Noise Level
HVAC Consultants	*"Benefits"* Energy Savings/ Protection Moderness Reduced Pollution	*"Risk"* Reliability/ Field Tested	*"Cost"* Initial Cost Noise Level

[a] *Adapted from Choffray and Lilien (1978), pp. 220–221.*

results for engineers, managers, and consultants. Generally, all perceived "benefits" and "risk," but "noise" and "cost" perceptions differed and the composition of these factors varied. In the industrial case, a good product positioning must be achieved with each member of the buying team.

Work on aircraft generators suggests that industrial customers evaluate these products along dimensions of merit such as light, inexpensive, reliable, and as small as possible. Although the dimensions in industrial products may be more engineering oriented, perceptions on such factors as reliability, service, and quality are important too, and perceptual positioning should be considered on these psychological dimensions as well as the engineering propensities.

How Many Dimensions?

In consumer and industrial markets an important question is, "How many dimensions should be on a map?" Should we use all the attributes upon which a product can be rated? Figure 9.3 shows the average consumer ratings on twenty-five scales representing attributes of a communication system.

This "snake plot," so-called because a line connecting the ratings "snakes" down the page, allows you to visually interpret the perceived positions of all existing products. This map indicates how scientists and managers at Los Alamos Scientific Laboratory in New Mexico view telephone and personal visits with respect to three new product concepts in communications. Careful examination of this map indicates the detailed strengths and weaknesses of each new product compared to existing alternatives. However, are people really using twenty-five independent dimensions to evaluate these alternatives? An analysis of data that produced Figure 9.3 indicates that two independent dimensions can adequately describe the perceptions of these communications options. The correlations between twenty-five basic attributes and each of the two dimensions are shown in Figures 9.4a and 9.4b. Upon examination, it is clear that dimension one is "effectiveness" and dimension two is "ease of use." Figure 9.5 shows how the existing products are positioned in this space. Compare Figures 9.3 and 9.5. The snake plot presented more detail, but tended to obscure the basic structure. In Figure 9.5 the market is clear. There is definitely a gap for a technology that is easier to use than personal visit, but more effective than the telephone. Note that neither narrow band video telephone or closed-circuit TV fill that gap. If the manager could develop a product in the starred (*) position, the new product might capture a significant share of the communications market.

The use of perceptual maps is important to managerial decision making. The snake plot (Figure 9.3) is difficult to interpret, while the two-dimension map (Figure 9.5) is simple, clear, and meaningful. To develop creative strategies, managers and other product development people must be able to internalize and visualize the market along a few dimensions. There is some

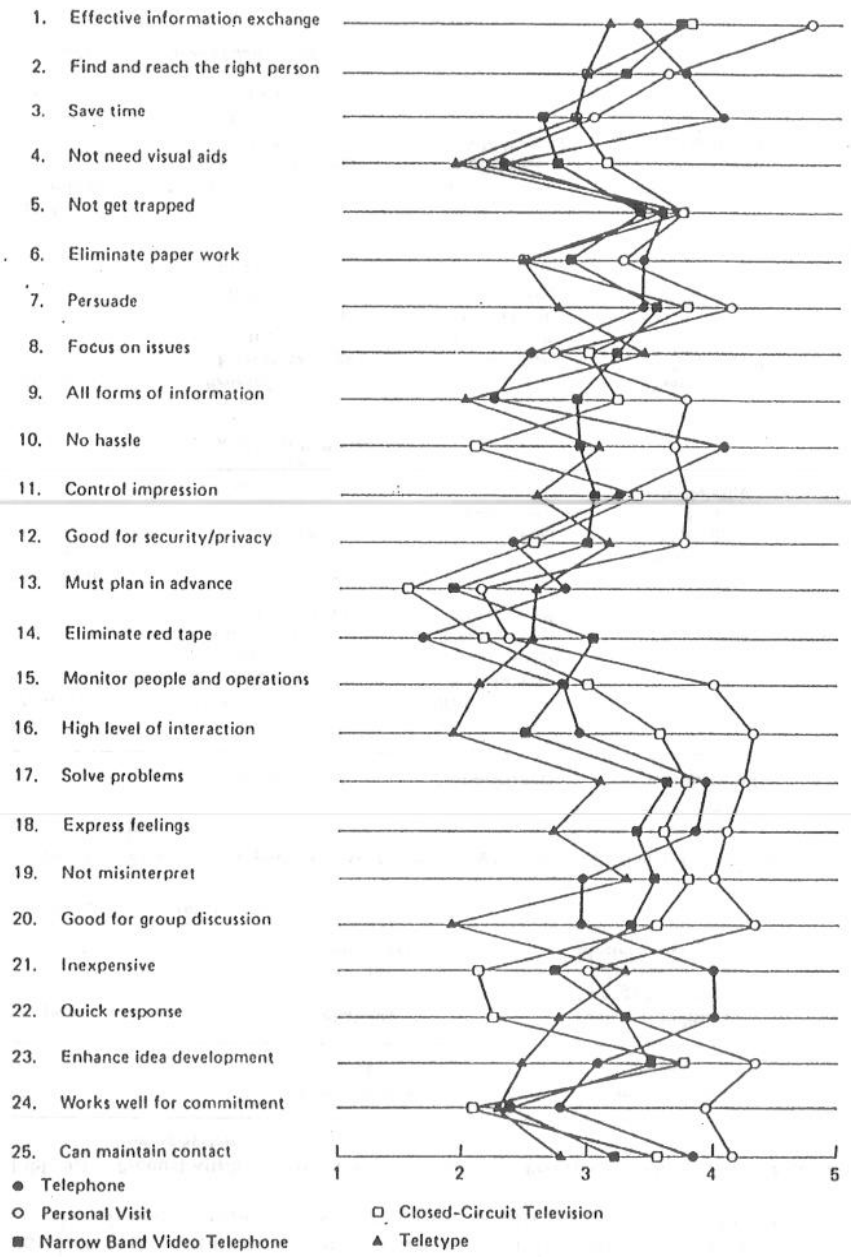


Figure 9.3. *"Snake Plot" of Scientists' and Managers' Perceptions of New Communications Options*

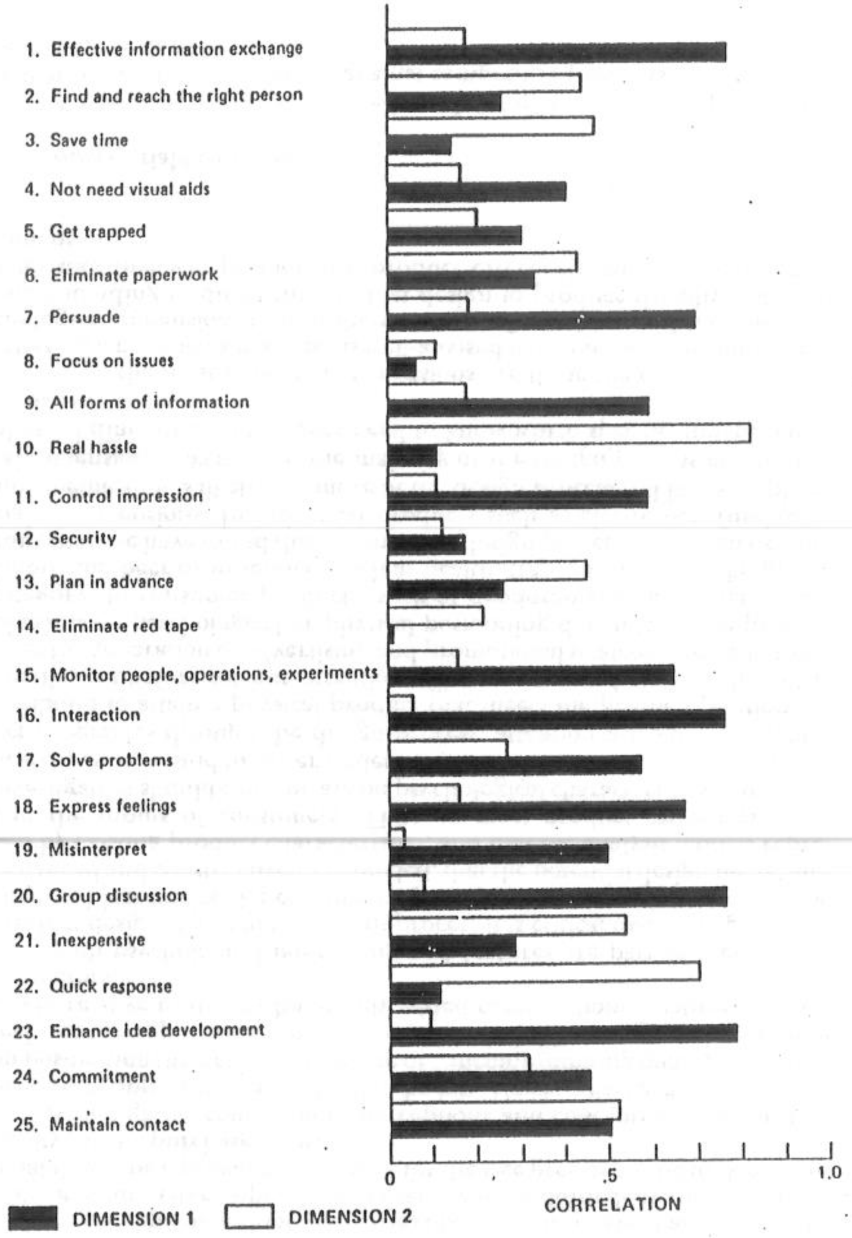


Figure 9.4. *Correlations between Communication Attributes and Perceptual Dimensions*

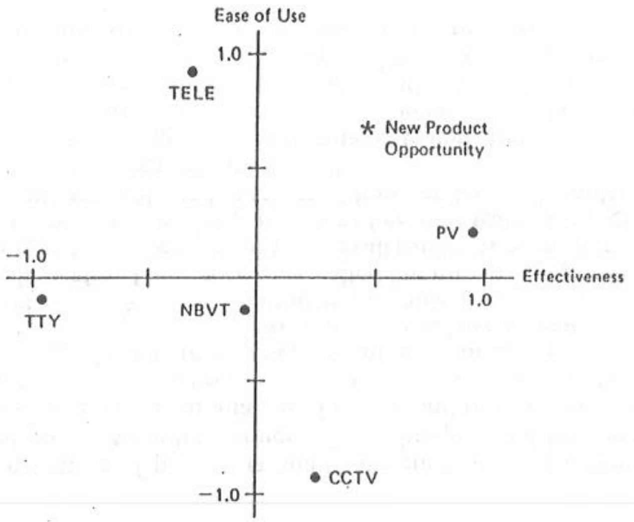


Figure 9.5. *Perceptual Map for Communications Options (Hauser and Shugan, 1980)*

evidence that consumers tend to simplify judgments by reducing dimensionality so to prevent cognitive strain and information overload. Finally, we will see in preference analysis that intercorrelations which almost always exist among attributes, make it impossible to statistically assign relative importance to the 25 attributes. Thus, to enhance creativity, to understand the market, to accurately model consumers, and to use the preference models, we must carefully analyze the basic attributes and reduce them to a set of underlying factors. This reduced set of dimensions and the positions of products upon them is the perceptual model we shall utilize in this text. The analytic techniques allow a determination of whether one, two, three, four, or more underlying dimensions are most appropriate to model consumer perceptions.

How Do Features Relate to Perception?

The examples shown above have utilized maps based on composite perceptions of products. It is common, however, to have new features in a product. For example, digital watches may have features that could be number of functions (hours, minutes, day, month, etc.), shape of face (round or rectangular), and material of strap (leather, metal, plastic). Automobiles have features such as air conditioning, thick carpets, vinyl top, or special decorative striping. These features are important in establishing perceptual positioning. Having ten functions in a watch will substantiate a perception of "computer-like." Thick carpets and a vinyl roof in an automobile will help substantiate a perception of luxury. We view features as essential to substantiating a perceptual position. IBM tries to convey the image that breakdowns will not occur in its computers. But even if a breakdown does occur, the basic reliability appeal provides a backstop for the vice president who took responsibility for the purchase decision.

Although we could ignore perceptions and concentrate only on features, real opportunities might then be lost. Hewlett-Packard concentrated on positioning their calculator as one of "uncompromising quality" and used features to support this. The market rewarded this strategy with premium prices relative to those who merely added computational features to their calculators.

Both psychological positioning and features are part of a good new product design. Early in the design process it is critical that managers visualize and internalize the consumers' perceptual process, that creativity be enhanced and constructively channeled, that the potential design not be limited by existing product characteristics, and that the analysis models represent the inputs of consumers. Thus, in most product categories, early investigation should concentrate on psychological characteristics to uncover new dimensions and to better understand the consumer. Later, as the product progresses through the design process, attention will shift to physical attributes to attain a physical product that meets the planned positioning. Finally, just before roll out, attention will return to psychological characteristics for generation of advertising and promotional strategies. Whether emphasis is on psychological or physical positioning depends on the product category. In consumer products, such as deodorants, antacids, hand-care lotion, and beer or in services such as health, transportation, banking, and education we have found that much of the design process focuses on psychological dimensions. In industrial products such as electronics, fuseboxes, and chemicals it is likely that more of the design process will focus on physical dimensions. Even when the majority of the design process emphasizes physical dimensions, managers need to know which specific dimensions to focus on.

Since the most important dimensions are those the consumer uses in selecting a product, a manager is well-advised to begin with consumers' psychological dimensions to find the structure of cognition and then use that understanding to direct the product design to produce the physical characteristics that will position the product effectively on the psychological dimensions.

Managerial Requirements

A new product manager needs to develop a core benefit proposition (CBP) and correctly position it against competitive products. To do this the manager needs to identify:

- the number of dimensions which best describe the market,
- the names of those dimensions,
- the positioning of existing products along these dimensions,
- the physical product characteristics to substantiate the perceptual positioning,
- where consumers prefer a product to be on the dimensions.

The manager needs the number, names, and existing positions to understand the market. He needs the link to physical characteristics so he can control his own position, and he needs the preferences to select the best positioning. In particular, the manager must move his product along a dimension that is not yet exploited in the existing market, or if no new dimensions can be found, the manager must identify a positioning which attracts consumers without undermining his company's sales on related products.

In this chapter we examine methods to derive perceptual maps that represent the position of existing products. We then extend these maps to represent the competitive position of a new product and its core benefit proposition. The maps allow identification of gaps in the market. The prioritizing of these gaps is addressed in Chapter 10 when preference models tell us how much relative reward can be earned by filling each gap. The position must be unique, but more importantly, it must lead to high sales and profit levels.

ANALYTICAL METHODS USED TO PRODUCE PERCEPTUAL MAPS

The examples of perceptual maps presented in the previous section were based on statistical techniques. The technique used for the telecommunications map was factor analysis. This method reduced the consumers' ratings on the 25 attribute scales to identify the structure underlying the attribute ratings. This method is dependent on prior specification of scales and it cannot identify any dimensions that do not have at least one attribute to represent them. Another method is available which does not depend upon specific scales. This procedure, called "non-metric multidimensional scaling," is based on judgments of the overall similarity of products. Instead of rating *each* product on a large number of explicit scales (see Figure 9.6a), *pairs* of brands are evaluated in terms of how similar or dissimilar the consumer views them to be (see Figure 9.6b).

There are advantages and disadvantages to both approaches (see Table 9.3). Attribute ratings directly elicit perceptions relative to psychological scales. Consumers' evaluation of products relative to these scales represents their evaluation of products in the marketplace. On the negative side, such scales can only measure the attributes that are represented by a scale. Thus

	Strongly Disagree	*Disagree*	*Neither Agree Nor Disagree*	*Agree*	*Strongly Agree*
I can convey all forms of technical information by telephone.	[ ]	[ ]	[ ]	[ ]	[ ]

(a) Attribute Rating

	1 *Very Similar*	2	3	4	5 *Very Different*
Telephone and narrow band video telephone	[ ]	[ ]	[ ]	[ ]	[ ]
Personal visit and narrow band video telephone	[ ]	[ ]	[ ]	[ ]	[ ]

(b) Similarity Judgement

Figure 9.6. *Alternative Consumer Measures to Product Perceptual Maps*

perceptual mapping techniques that are based on attribute scales are strongly dependent on the analyst's ability to use focus groups and to use previous experience to develop a more or less complete set of scales.

Similarity measurement has an advantage over attribute measurement because it gathers information independently of the attribute set. Consumer statements on which products are most similar help define the market and indicate which products are in direct competition and which are not. On the negative side, similarities alone cannot name the psychological dimensions and the manager must depend to some extent on attribute ratings or his personal knowledge of the market. Furthermore, minor problems result from the fact that similarity is left undefined and consumers' reaction to the measurement can vary. Finally, the computer analysis is expensive and technical problems prevent similarity maps from being used in markets where there are fewer than eight products in the average consumer's evoked set.

Both measures and the corresponding analytic techniques are useful in new product design. Techniques based on attributes are used to identify structure once a good set of attributes is identified. They provide accurate, interpretable measures and predict quite well. Techniques based on similarity measures are most useful to search for structure when nonverbal aspects of perception are present. They provide maps which are complementary to attribute-based techniques. No one technique is suited to every situation.

Table 9.3. Analytic Techniques to Produce Perceptual Map

Technique	*Consumer Measure*	*Advantages*	*Disadvantages*
Factor Analysis	Attribute Ratings	Easy, Inexpensive, Accurate Based on Assumption on How Consumers React to Attribute Scales	Requires a Complete Set of Attribute Scales
Similarity Maps	Dissimilarity Judgments	Does not Depend on Attribute Set Provides and Alternative View of Perceptual Map	Special Programs Required Statistical Limitations, if Few Products

Rather it is important that the manager recognizes when to use each technique in order to determine the structure of the market and produce the perceptual map that leads to the creative insight that will produce a successful new product.

The remainder of the chapter discusses analytic techniques that use either attribute measures or similarity measures to produce perceptual maps. In each section we give the basic conceptual ideas behind the techniques and illustrate their use with examples taken from actual new product analyses. We present the basic mathematical equations that underlie these techniques. For those who would like a more in-depth treatment of the mathematics, we have included technical appendices to introduce the statistical analysis and to serve as a guide to further study of these techniques. As we present the alternative methods, the advantages and disadvantages cited in Table 9.3 are discussed along with issues of when each technique is appropriate and how to use it in the design process. We begin with an attribute-based technique—factor analysis, that we have found to be most productive early in the design process. An alternative technique—discriminant analysis, is described in Pessemier (1977).

Since all readers may not want to follow all the mathematics, here and in subsequent chapters, we attempt to make clear non-mathematically the general methodology and its appropriateness for new product analysis. Technical details are contained in the appendices.

Factor Analysis of Attribute Ratings

Factor analysis attempts to find a number of dimensions that can represent the information in a large set of attribute ratings. This is done by examining the correlation between the ratings. If two scales are perfectly correlated, then we only need one of them. If two scales are highly correlated, we can presume they are attempting to measure the same underlying attitude. Factor analysis looks for correlations between rating scales and estimates their correlations to underlying dimensions. These correlations are called factor loadings. We describe the model that links factor loadings and ratings and consider the activities of naming dimensions, determining the number of dimensions, producing the map, and placing a new product on the map.

Underlying Model of Ratings. Consider Figures 9.4 and 9.5. Suppose that consumers really do evaluate communications options based on their "effectiveness" and their "ease of use." What would we expect to happen when consumers rate the communications options on the set of basic scales? Consider the attribute "convey all forms of technical information." When a single consumer rates a product on this attribute, we expect a "common" effect due to his underlying belief about the overall "effectiveness" of the product, plus a "unique" effect due to his knowledge about the attribute in question, plus some "residual" effect due to measurement errors. When we measure many consumers on all 25 scales, we expect these effects to surface as components that explain the variation in the way consumers rate products (see Figure 9.7).

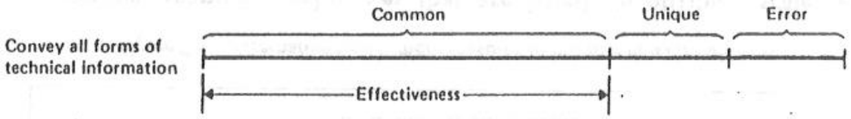


Figure 9.7. *Components of a Consumer's Response to an Attribute Scale*

Consider an individual consumer, labeled by the subscript i, a specific product (e.g., a telephone), labeled by the subscript j, and an attribute (e.g., "convey all forms of technical information"), labeled by the subscript l. Then we expect this consumer's rating (y_{ijl}) of telephone on "convey all forms of technical information" is due to some fraction (f_l) of his overall belief (x_{ij}) about a telephone's effectiveness plus some measure of unique value (u_{ijl}) on "convey all forms of technical information" and some error (ϵ_{ijl}). Mathematically:

$$y_{ijl} = f_l x_{ij} + u_{ijl} + \epsilon_{ijl} \tag{9.1}$$

For example, a consumer's rating ($y_{ijl} = 4$) of telephone on "convey all forms of technical information" might be made of a component ($f_l x_{ij} = 3.5$) due to his overall evaluation of the effectiveness of telephone, a component ($u_{ijl} = 0.7$) due uniquely to the measurement scale, and a component ($\epsilon_{ijl} = -0.2$) due to error.

Actually, on some attributes we can expect common effects due to both "effectiveness" and "ease of use." Thus, if we subscript the dimensions (effectiveness and ease of use) by k and write equation (9.1) in summation notation, we get:

$$y_{ijl} = \sum_{k=l}^{2} f_{lk} x_{ijk} + u_{ijl} + \epsilon_{ijl} \tag{9.2}$$

where y_{ijl} = rating of individual i for product j on attribute scale l.

f_{lk} = factor loading of scale l and underlying dimension k.

x_{ijk} = position of product j on underlying dimension k by individual i. This is termed the "factor score."

u_{ijl} = unique contribution of individual i's rating of product j on scale l.

ϵ_{ijl} = error term.

Clearly, equation (9.2) can be extended to 3, 4, or more dimensions.

Suppose now we could somehow determine the f_{lk}'s. These are called the factor loadings. In other words, suppose we knew ratings on "convey all forms of information"

$$= (0.65)\,(\text{factor } 1) + (-0.18)\,(\text{factor } 2) + \text{unique} + \text{error}.$$

Then, by examining a table of f_{lk}'s to determine which attributes load heavily on which factors, we could name the factors. This was done in Figure 9.4, which was simply a plot of the factor loadings (the f_{lk}'s).

Equation (9.2) specifies the model for what is termed "common" factor analysis. Another type is called "principal components" factor analysis. The model is the same as equation (9.2) except the u_{ijl} term (unique scale component) is omitted. In principal component analysis, all the variation in the ratings is assigned to the underlying dimensions. In both the common and principal components modeling, the analytic method estimates the factor loadings (f_{lk}).

Naming the Dimensions. Factor analysis determines the factor loadings. For example, Table 9.4 gives the factor loadings relating the two factors to the 25 attributes that describe communications options. These loadings produced the bar graphs that were shown Figure 9.4. By underlining the heavy loadings, those with correlation 0.40 or better, and examining the relationships among the heavy loaders, it is possible to name these dimensions "effectiveness" and "ease of use."

To obtain these correlations, a data matrix must be factor analyzed.

Table 9.4. Loadings Used to Name the Dimensions of the Perceptual Map for Factor Analysis[a]

Attributes	Effectiveness	Ease of Use
1. Effective Information Exchange (−)	−0.77	−0.17
2. Find and Reach Right Person	0.25	0.43
3. Save Time	0.17	0.47
4. Not Need Visual Aids	0.39	−0.16
5. Get Trapped (−)	−0.33	−0.20
6. Eliminate Paperwork	0.31	0.43
7. Persuade (−)	−0.70	−0.20
8. Focus on Issues	−0.04	−0.07
9. All Forms of Information	0.65	−0.18
10. Real Hassle (−)	−0.11	−0.83
11. Control Impression	0.56	0.07
12. Security	0.18	0.11
13. Plan in Advance (−)	0.23	−0.44
14. Eliminate Red Tape	−0.00	−0.21
15. Monitor People, Operations, Experiments	0.65	0.15
16. Interaction	0.78	0.05
17. Solve Problems (−)	−0.55	−0.27
18. Express Feelings	0.66	0.17
19. Misinterpret (−)	−0.49	0.00
20. Group Discussion	0.75	0.05
21. Inexpensive	−0.27	0.52
22. Quick Response	0.07	0.71
23. Enhance Idea Development	0.77	0.09
24. Commitment	0.44	0.32
25. Maintain Contact	0.50	0.52

[a] *(−) indicates question was worded so that a high attribute rating would mean a poor evaluation.*

This data matrix, represented in Table 9.5, is the matrix of basic attribute ratings for all individuals on each product in their evoked set. That is, if there are N individuals with an average of $\bar{J}$ products in their evoked set, and if there are L attributes, the data matrix which is factor analyzed is the $N\bar{J} \times L$ matrix of attribute ratings. In words, the basic attributes are factor analyzed across individuals and products. The entries in the matrix are the row scale ratings (e.g., assigned values one to five in Figure 9.6a) for a given individual and product on a five-category attribute scale. For example, if you agreed that with telephone you could "convey all forms of technical information" then you, individual 1, would enter a "4" for telephone on that attribute. (A more accurate procedure is to then standardize these values by taking out the mean and variance for each individual across attributes and products. This procedure reduces individual biases such as using extreme ends or limited ranges on the five-point agree/disagree scale.)

Intuitively, factor analysis searches for a common set of factors that can explain the variation in the ratings that consumers assign to their perceptions of the products relative to the attribute scales. For a given number of factors, say K factors, the computer algorithms determine the factor loadings for the K factors which explain as much as possible of this variation. The matrix is then "rotated" to find a simple structure and improve the ability to identify the factors. Appendix 9.1 gives the mathematical details of factor analysis with this description. One of several standard statistical packages (SPSS, BIOMED, or PSTAT) can be used to perform factor analysis.

Table 9.5. Schematic Representation of Data Matrix for Factor Analysis.

		Attribute 1	Attribute 2	· · ·	Attribute 3
Individual 1:	Product 1	y_{111}	y_{112}	· · ·	y_{11L}
	Product 2	y_{121}	y_{122}	· · ·	y_{12L}
	·	·	·		
	Product J	y_{1J1}	y_{1J2}	· · ·	y_{1JL}
Individual 2:	Product 1	y_{211}	y_{212}	· · ·	y_{21L}
	Product 2	y_{221}	y_{222}	· · ·	y_{22L}
	·	·	·		
	Product J	y_{2J1}	y_{2J2}	· · ·	y_{2JL}
·					
Individual N:	Product 1	y_{N11}	y_{N12}	· · ·	y_{N1L}
	Product 2	y_{N21}	y_{N22}	· · ·	y_{N2L}
	·	·	·		
	Product J	y_{NJ1}	y_{NJ2}	· · ·	y_{NJL}

Determining the Number of Dimensions. You can name the dimensions by examining the factor loadings, but how do you determine the right number of dimensions? Statistically, the way factor analysis works is that it examines the matrix of correlations among the basic attributes and extracts factors one by one in order of variance explained. By examining the variance explained by each successive factor, an analyst can make judgments about when to cut off the factor analysis. There are two classical rules of thumb for determining the number of factors: the "scree" test and the "eigenvalue" rule.

The scree test is illustrated in Figure 9.8. Here we have plotted the incremental variance explained by each factor vs. the order in which that factor was extracted. Percentage variance explained is a standard output of most statistical packages for factor analysis. Factors are retained up to the point where incremental contribution levels off. The scree test takes its name from geology, where the "scree" is the pile of rock that accumulates at the bottom of a cliff. Some researchers prefer to plot cumulative variance explained rather than incremental variance explained, and apply related cutoff rules.

The eigenvalue rule is similar to the scree rule, except the cutoff is when

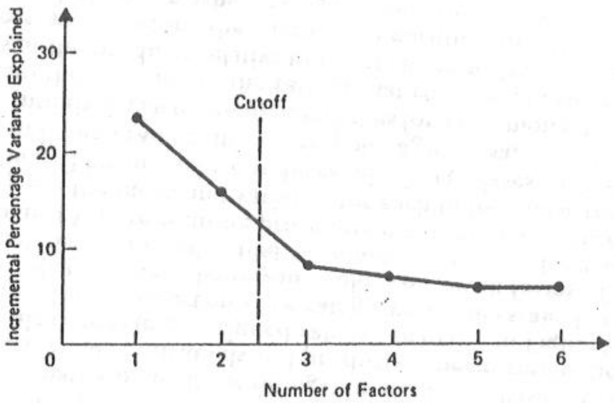


Figure 9.8. *Scree Test*

the fraction of variance explained by the next successive factor drops below (1/*L*,) where *L* is the number of attributes. Statistically, this point is reached when a number called the "eigenvalue," which is associated with each factor, drops below 1.0 (eigenvalues are standard outputs of the statistical packages). Recently Montanelli and Humphreys (1976) have developed a more sophisticated method of determining the appropriate number of factors which compares actual eigenvalues to eigenvalues that would be obtained from random data.

In practice, either the eigenvalue rule or scree test is used to select the appropriate number of factors, but this is not an automated procedure. The selection is often a mix of statistical rules and commonsense judgment. There is often a tradeoff between variance explained and interpretation of the structure of the factor loadings. Thus, it is good practice to interpret not only the analysis obtained with the rules of thumb, but also analyses that have one more, or one fewer factors. The final selection of structure (i.e., number of factors) should be based on the often conflicting goals of variance explained, ease of interpreting structure, usefulness to the creative team, and linkage to actionable managerial decisions.

Producing the Perceptual Map. So far we have shown how to determine the number of dimensions and name them. The next step is to produce a perceptual map by estimating the positionings of each existing product. Mathematically, we have to determine the factor scores (x_{ijk}'s) of equation (9.2) where x_{ijk} is the individual i's perception of product j on dimension k. For example, x_{111} might be the first individual's ($i = 1$) perception of telephone ($j = 1$) on effectiveness ($k = 1$).

A product's position, $\bar{x}_{jk}$, along any dimension is then obtained by averaging the factor scores (once obtained) across consumers. For example, in Table 9.6 the position of telephone on effectiveness would be obtained by

Table 9.6. Example of Data Matrix with Estimated Factor Scores (see Fig. 9.5 for abbreviations)

		Attribute Scales					Factor Scores on Dimensions	
		Effec. Info Exch. (l = 1)	*Find and Reach (l = 2)*	*Save Time (l = 3)*		*Maintain Contact (l = 25)*	*Effectiveness (k = 1)*	*Ease of Use (k = 2)*
Individual 1:								
Telephone	($j = 1$)	4	2	4		1	−0.3	0.9
Personal visit	($j = 2$)	1	3	2		3	1.0	0.2
NBVT	($j = 3$)	2	2	2	…	2	0.0	−0.2
TTY	($j = 4$)	3	2	2		1	−1.0	−0.1
CCTV	($j = 5$)	3	1	1		1	0.2	−0.9
Individual 2:								
Telephone	($j = 1$)	3	1	5		1	−0.4	0.8
Personal Visit	($j = 2$)	2	2	3		2	1.1	0.1
NBVT	($j = 3$)	3	1	3	…	1	0.1	−0.3
TTY	($j = 4$)	4	1	3		1	−0.9	−0.2
CCTV	($j = 5$)	2	1	2		1	0.3	−1.0
			⋮					
Individual N:								
Telephone	($j = 1$)	5	3	3		2	−0.2	1.0
Personal Visit	($j = 2$)	2	4	1		4	0.9	0.3
NBVT	($j = 3$)	5	3	1	…	3	−0.1	−0.1
TTY	($j = 4$)	5	3	1		2	−1.1	0.0
CCTV	($j = 5$)	4	2	1		2	0.1	−0.8

taking the average over the factor scores for the effectiveness of telephone (circled numbers). Of course, if you wish a map for a segment of the population rather than the whole population, these averages can be taken on a segment-by-segment basis. The perceived positions of the products in Figures 9.1, 9.2, and 9.5 were computed in this way.

If *principal components factor analysis* is used, the calculation of x_{ijk} is straightforward since the ratings (y_{ijl}) and factor loadings (f_{lk}) are known and equation (9.2) is directly solved for x_{ijk}.

When *common factor analysis* is used, the task is more complex since the unique scale component is present. A regression-like procedure is used to estimate the factor scores (see Appendix 9.1). One disadvantage of this method is that the factor scores and therefore map positions are subject to greater error variance when the total variance explained is "not large," i.e., less than 80 to 90 percent. This is less true in principal components since the factor scores are exactly evaluated. Common factor analysis has a more attractive underlying model, but the factor scores from the principal components methods are more precise. We find it useful to do both common and principal components factor analyses. If they agree, as they usually do, in the number of dimensions and interpretations, use the principal component factor scores to draw the perceptual map; if they do not agree, use the common factor analysis results. For both common factor analysis and principal components the estimated factor scores are standard outputs of most statistical packages.

Another useful part of factor analysis is the description of the factor scores as a linear function of the original ratings. Parameters of this equation are called the "factor score coefficients." In principal component factor analysis, the factor score coefficients are directly calculated, but in common factor analysis, they are estimated by the regression-like procedure used to compute the factor scores. The implied multiple linear regression is:

$$x_{ijk} = \sum_{l=1}^{L} b_{kl} y_{ijl} + \text{error} \tag{9.3}$$

where x_{ijk} = factor scores; position of product j on underlying dimension k by individual i.

y_{ijl} = standardized rating of individual i for product j on attribute scale l.

b_{kl} = factor score coefficient for scale l and underlying dimension k.

Since the x_{ijk}'s are unknown, a standard regression cannot be run. Fortunately, estimates, $\hat{b}_{kl}$, of the b_{kl}'s can be computed based on the correlation matrix and are standard outputs of most statistical packages for both common factor analysis and principal components.

To obtain the estimates of effectiveness and ease of use in Table 9.6, standardize the attribute ratings in the first 25 columns, ($l = 1$ to 25) of Table 9.6 to get the y_{ijl}'s and use the factor score coefficients ($\hat{b}_{kl}$'s) from Table 9.7. Consider individual 1. Suppose that, when standardized, the ratings for telephone become $y_{111} = 1.5, y_{112} = 0.8, y_{113} = 0.9, \ldots, y_{1125} = -1.3$. These numbers replace the first 25 columns of the first row of Table 9.6. Then the estimated effectiveness for telephone is given by

$$\begin{aligned} x_{111} = &(-0.10)(1.5) + (-0.03)(0.8) + (-0.05)(0.7) \\ &+ \cdots + (0.07)(-1.3) = -0.3 \end{aligned}$$

where the b_{1l}'s come from the first column of Table 9.7. The factor score estimates with principal components are obtained from the factor score coefficients in an analogous way.

We have defined three outputs—factor loadings, factor scores, and factor score coefficients. The loadings are the correlation of the scales to the underlying dimensions (Table 9.4). The factor scores (Table 9.6) when averaged across individuals specify the coordinates for a product on the perceptual map. The factor score coefficients (Table 9.7) link the standardized input attribute scales to the factor scores.

The managerial output of the factor analysis is a perceptual map made up of a specified number of labeled dimensions and the coordinates of each existing product on these dimensions.

Table 9.7. Factor Score Coefficients Used to Estimate Product Positions in Perceptual Map

Attribute	*Effectiveness*	*Ease of Use*
1. Effective Information Exchange (−)	−0.10	−0.04
2. Find and Reach the Right Person	−0.03	0.11
3. Save Time	−0.05	0.26
4. Not Need Visual Aids	−0.06	0.04
5. Get Trapped (−)	−0.07	0.06
6. Eliminate Paperwork	−0.02	0.18
7. Persuade (−)	−0.13	0.01
8. Focus on Issues	0.01	−0.00
9. All Forms of Information	−0.02	−0.05
10. Real Hassle (−)	0.07	−0.29
11. Control Impression	0.03	−0.04
12. Security	−0.00	−0.02
13. Plan in Advance (−)	0.04	0.00
14. Eliminate Red Tape	0.00	0.01
15. Monitor People, Operations, Experiments	0.05	0.01
16. Interaction	0.25	−0.07
17. Solve Problems (−)	−0.02	−0.09
18. Express Feelings	0.13	−0.05
19. Misinterpret (−)	0.00	0.05
20. Group Discussion	0.20	−0.08
21. Inexpensive	−0.04	0.09
22. Quick Response	−0.04	0.20
23. Enhance Idea Development	0.22	−0.05
24. Commitment	0.06	0.05
25. Maintain Contact	0.07	0.18

(−) indicates question was negatively worded.

Position of a New Product. If you have measured consumers' reactions to a concept statement or to an actual sample of a new product, estimation of that new product's position follows the same technique as for existing products. The factor analysis directly supplies the factor scores for each individual and each dimension for the product. When averaged across all individuals, the new brand is positioned on the map.

A manager can then examine if it is the desirable position. For example, Figure 9.9 shows the positions of two new transportation services based on ratings of one-page descriptions of these services.

Both concepts were designed to improve the quickness, convenience, and ease of travel of public transit. Budget Taxi Plan (BTP), is a privately operated system which provides service similar to that provided by taxis, but at a lower price. The only change is that if you request the budget plan, the driver may pick up and drop off other passengers on the way to your destination. Personalized Premium Service (PPS), is a publicly operated version of the same system except that service is provided with minibuses instead of taxicabs. The perceptual map in Figure 9.9 indicates that the new systems are perceived as significantly better than the existing bus service on quickness, convenience, and ease of travel but somewhat poorer on psychological comfort. Furthermore, there are some differences between perceptions of the private and public systems. Figure 9.9 suggests that if the actual systems can provide the level of service described in the one-page concepts, then they will improve consumers' perceptions of public transportation and likely lead to greater ridership. The managerial decision to further develop the system will depend upon consumer preferences (Chapter 10), the ridership forecast (Chapter 11), and the costs of providing service.

Another method of placing a new product on the map is by estimating the average attribute scale ratings of the new product and using the factor score coefficients to estimate the coordinates

$$\bar{x}_{jk} = \sum_{l=1}^{L} b_{kl}\bar{y}_{jl} \tag{9.4}$$

where $\bar{x}_{jk}$ = coordinates of product j on perceptual map dimension k.

b_{kl} = estimated factor score coefficient for scale l and dimension k.

$\bar{y}_{jl}$ = average standardized scale ratings for product j on scale l.

For example, you might consider a new transportation service that was an improvement over PPS. To estimate its position on the perceptual map you would first estimate how consumers would perceive it, on average, on the attributes. You would then use equation (9.4) to compute the average perceptual positions and plot them on the map in Figure 9.9. The use of equation (9.4) is similar to that of equation (9.3) except you use average rather than individual scale ratings.

Earlier, we advocated "stretcher concepts" such as the BTP and PPS services which expand the range of measurement and hence the perceptual and later preference models. In prediction, stretchers provide good reference points so that one can estimate how a new product will differ from the stretchers. For example, in Figure 9.5 the new telecommunications service product may be an improved version of Narrow Band Video Telephone. The product team may achieve this by making it more available (easier to use) and by providing better resolution in transmission (more effective). The product team can then estimate the new position by one of three ways:

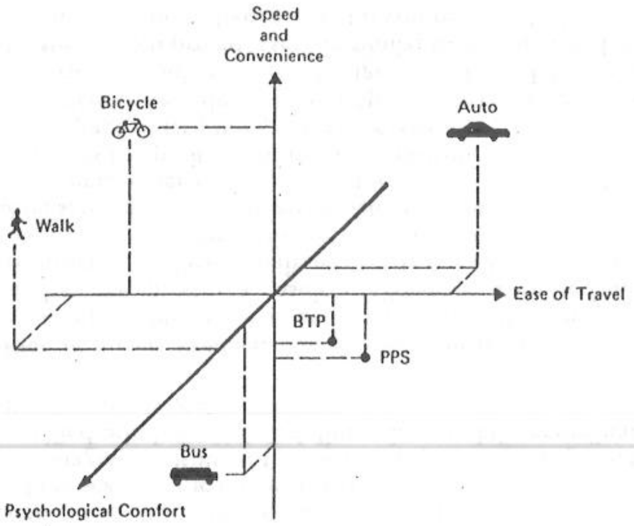


Figure 9.9. *New Service Positionings (adapted from Hauser and Wisniewski, 1979)*

- create a new concept and remeasure consumers.
- judgmentally estimate the resulting change in attribute ratings ($\bar{y}_{jl}$) by comparing it to a stretcher and use equation (9.4) to compute the change in factor scores ($\bar{x}_{jk}$'s).
- judgmentally estimate the resulting change in factor scores (x_{jk}'s) and simply move the position on the map.

The first procedure will give the best estimate of the new position, but it is costly and time consuming. If used carefully, the second and third procedures can provide excellent estimates that can give good "ballpark" indications of where the new product will be positioned. Note that the second procedure provides a direct link between measured attributes and the factor scores. It couples judgment with analytic procedure to provide estimates that are often less prone to error than the third procedure, which requires direct judgments on the factor scores.

New product managers should use the perceptual maps, the factor loadings, and the factor score coefficients to choose a positioning and then to select the attributes and features that will give them that positioning.

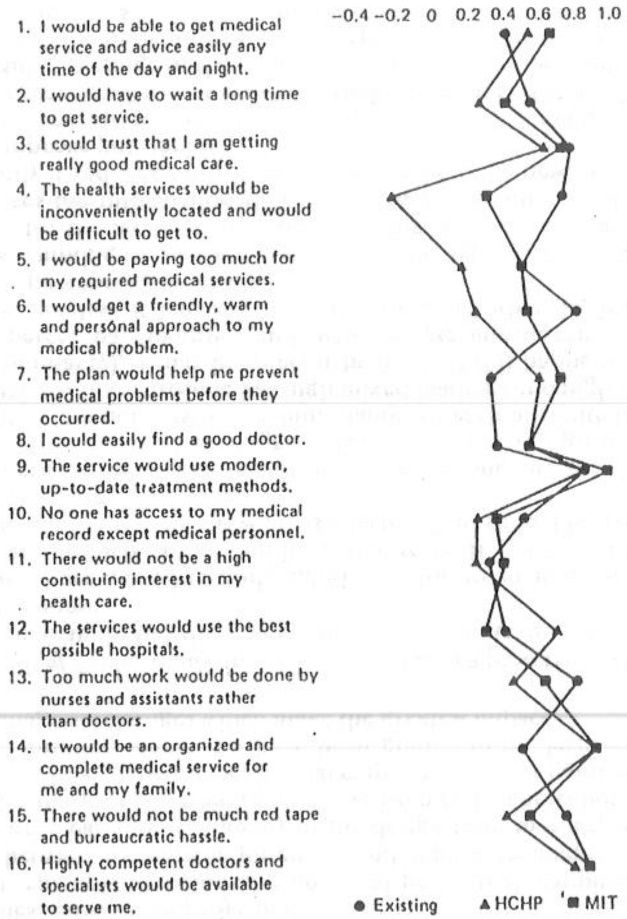
Example: Health Maintenance Organization. In 1975, the MIT Health Department was considering conversion to a health maintenance organization (HMO) that would provide most medical care for a fixed annual fee. The managerial problem was to design the HMO in such a way as to attract enough consumers to support the fixed costs and the operating costs of the plan. Perceptual analysis was performed to examine the new product concept relative to existing care, to a similar pilot HMO program that had been in operation for one year, and to the major competition—Harvard Community Health Plan—which in the fall of 1975 had the potential to be offered as a dual-care option to the MIT community. That is, due to federal regulations, all MIT employees would have the option to join the Harvard plan instead of the existing Blue Cross/Blue Shield plan.

Questionnaires were sent out to 1,000 members of the community. Of the 447 that were returned, 367 were prospective members of the pilot HMO and 80 were actual members of the pilot program. Figure 9.10 gives the snake plot for sixteen attribute scales, the factor loadings, and the resulting perceptual map.

By examining the high loadings on each dimension, they were labeled: (1) quality, (2) personalness, (3) value, and (4) convenience. Quality correlated with trust, preventive care, availability of good doctors, and hospitals. Personalness reflected a friendly atmosphere with privacy and no bureaucratic hassle. Value was not just price, but rather paying the right amount for services. Convenience reflected location, waiting time, and hours of operation.

Based on the perceptual map of Figure 9.10 it is clear that average perceptions of existing care are superior to the new HMO on all dimensions except convenience. Thus, it is unlikely that the concept as stated could draw a large number of consumers from existing care. Now compare the perceptions of the concept description to those of the pilot program. The pilot plan exceeds the concept in all dimensions, even though they are essentially the same product. Although this could be self-selection or post-purchase rationalization, it is more likely that this is a case of a good product where few people perceive it as such until using it. The managerial implications of this finding are that if the HMO is to be successful it would have to develop an aggressive campaign to communicate actual plan performance to perspective members. Perhaps testimonials and "live" media advertising (e.g., slide shows) would improve the image.

Next, note that relative to the major competition, Harvard Community Health Plan, the MIT concept (or pilot) is perceived better on all dimensions except quality. At this point in our analysis we have no indication of the relative importance of quality and do not know whether this difference can exert a major influence on consumers' response. Finding these importances is the next step in the analysis, which will be covered in Chapter 10. As you might expect, quality turns out to be a key variable and the gap should be closed, if possible. By examining the factor loadings, we see that attributes 3, 7, 8, 9, 12, 14, and 16 load on quality and, by examining the snake plot, we see that the lower rating for MIT in quality is based almost entirely on a low score for MIT on hospital quality. Thus, if the plan is to be successful, the design team should identify some method to move on the quality of hospitals—perhaps by switching affiliation or by emphasizing the best hospital of those that are now affiliated. In the HMO case both strategies were possible.

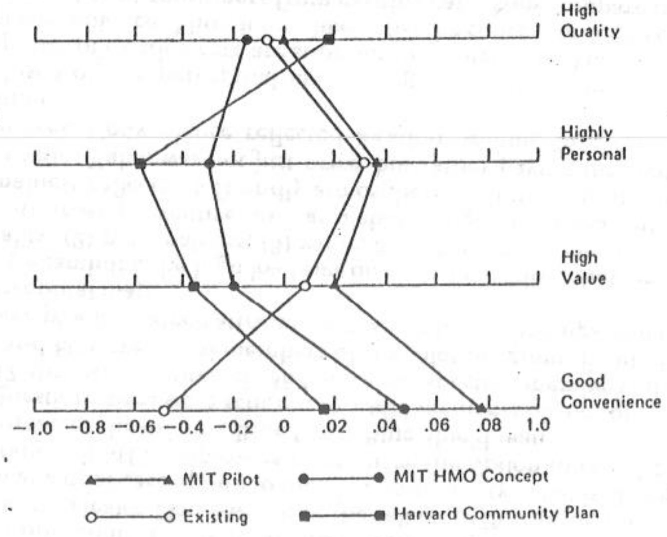


(a) Average Ratings

Figure 9.10. *Perceptual Analysis for Health Care Delivery (Hauser and Urban, 1977)*

ATTRIBUTE SCALE	QUALITY	PERSONAL	VALUE	CONVENIENCE
1. Day & Night Care	0.37244	0.07363	−0.31379	0.63939
2. Waiting Time	−0.22082	0.26204	0.15514	−0.64370
3. Trust-Good Care	0.72125	−0.21826	−0.09556	0.24703
4. Location	0.01144	0.24706	−0.12544	−0.72454
5. Price/Value	0.03066	0.12810	0.72884	−0.08461
6. Friendly/Personal	0.40986	−0.51317	−0.12265	0.16768
7. Preventive Care	0.55403	−0.14187	−0.44353	−0.01653
8. Easily Find Good M.D.	0.64412	−0.15036	−0.21491	0.27113
9. Modern Treatment	0.72288	−0.13441	−0.15906	0.08018
10. Access to Records	0.43412	−0.49053	0.18749	−0.06982
11. Continuity of Care	0.20491	0.47900	0.47727	0.04725
12. Associated Hospitals	0.68006	−0.08256	0.10854	0.00555
13. Use of Paramedicals	−0.05303	0.67083	0.12299	0.16722
14. Organized/Complete	0.47725	0.01627	−0.52893	0.14316
15. Hassle/Red Tape	−0.13031	0.69824	0.11830	−0.27903
16. Competent M.D.s	0.73953	−0.19335	−0.13971	0.18691
Eigenvalues	5.34	1.4	1.1	1.02
Cumulative Variance	0.33	0.42	0.49	0.55

(b) Factor Loadings



(c) Perceptual Map

Figure 9.10. *(continued)*

Thus, the perceptual map indicated two key strategies: (1) a more aggressive communication campaign and (2) a shift in hospital affiliation. Judgmentally, these improvements were expected to move the perceptual position of the MIT concept one-half of the distance from the concept to actual pilot (or the Harvard performance) on quality, personalness, and value. Based on the preference analysis of Chapter 10 and the subsequent calculations of purchase potential in Chapter 11, these changes increased the expected enrollment from 3,622 families to 5,405 families—an increase of almost 50 percent. Actual experience after making these changes confirmed these enrollment projections.

This example illustrates the power of perceptual mapping. Note the synergy between managerial judgment and analytic technique. The major changes were based on the ability of the design team to interpret the analytics. The analytics alone would not have been sufficient without the intuitive grasp of how to use the perceptual map. On the other hand, without the analytics, intuition would not have been guided to the leverage points—those managerial changes which make the greatest impact.

Pitfalls of Factor Analysis. Factor analysis is a powerful technique for perceptual analysis, but there are many dangers in its use. We list a few of the most common.

If you have a hard-to-understand scale for an attribute, most people will rate all products on the middle of that scale. If you have a number of these bad scales, they will show up as a factor. This should be avoided with careful pretesting of the scales.

If there is one or more scales that is very strong and should stand by itself, it will force mixed loadings on factors. You can recognize this by examining the "uniqueness" or "communality" of each attribute in common factor analysis. If an attribute has high mixed loadings and high uniqueness (low communality), it may be a factor by itself. If this happens, use it as a separate perceptual dimension and factor analyze only the remaining scales. Preference analysis (Chapter 10) will determine whether this is actually an important perceptual dimension.

It is tempting to use the attribute with the highest factor loadings as a surrogate for the factor score. This procedure has no sound analytic basis and ignores the information that is present in the other attributes. Most importantly it reduces control options available to the new product design team to improve positioning.

If the concept statements do not span the set of feasible alternatives, the factor score coefficients may not provide accurate estimates for alternatives outside the range of the concept statements. Thus, it is better to begin with strong stretcher concepts and interpolate into a feasible product than to have what seems to be the limit of feasible concepts and later find you must extrapolate a new product outside the range of the data.

Discussion and Summary. The above examples for analgesics, communications, health care, and transportation show the versatility of factor analysis. Factor analysis also has been used successfully in other frequently purchased products (deodorants, antacids, hand-care lotions, etc.), in industrial air conditioners, financial services, and a myriad of other product categories. To use factor analysis in another category simply:

- Obtain the structure of perceptions by factor analyzing consumers' ratings of product attributes across consumers and products. Interpret and name the factors by examining the factor loadings.
- Select the appropriate number of dimensions by judgment, based on simple structure, interpretability, and either the "scree" rule, the "eigenvalue" rule.
- Estimate the positions of existing products, test products, and concepts by the use of factor scores, or factor score coefficients and the attribute scales.
- Obtain new product positions by proactively examining the perceptual map and selecting the strategy to produce the chosen position. Calculate this position by judgment or by using the factor score coefficients.

The advantage of factor analysis is that it works well and predicts well. It is inexpensive to use (an average single run on the computer costs under $10) and relatively easy to implement with standard statistical computer packages. The behavioral assumption of how consumers react to measurement scales (Figure 9.7) is appealing; empirically it leads to results with strong face validity. The major disadvantage is that it depends on a well-specified set of fundamental attributes and can only identify structure *within* a set of attributes, not beyond them.

Before considering mapping techniques that do not depend upon rating scales, we should point out that factor analysis is not the only method of converting ratings into a perceptual map. Other researchers have successfully used *discriminant analysis* for automobiles (Pessemier, 1977), political candidates (Johnson, 1970), and other products. Managerially, this technique is used and interpreted in the same manner as factor analysis, but it is based on a different behavioral assumption and uses a different analytic technique. Intuitively, the behavioral assumption is based on selecting the dimensions to maximumly discriminate among existing products. While at first glance discriminant analysis is appealing, we have found that it concentrates on variation between products and subsequently ignores variation among consumers. Factor analysis examines both. In two comparative empirical tests to date, factor analysis was found to be more complete and to predict better than discriminant analysis (Hauser and Koppelman, 1979, Simmie, 1978).

Non-Metric Scaling of Similarity Judgments

In the last section we outlined a method of deriving a perceptual map from ratings of product attributes. In this section we describe a different set of analytical procedures that are designed to derive perceptual maps from judgments of the similarity of products. We introduce this notion with a simple example based on your perception of management schools.

Consider the business schools of Harvard, Stanford, MIT, and Northwestern. Which two are most similar? Say you judge Harvard and Stanford most similar to each other. Which two are most dissimilar? Say you judge Harvard and MIT most different. Now consider which pair is second most similar, say Stanford and Northwestern. Second most dissimilar—Stanford/MIT. Now consider the other pairs, Harvard/Northwestern and MIT/Northwestern. Let us say you think the two schools Harvard and Northwestern are more similar than MIT and Northwestern. You have now described the rank order of the pairs of schools, as shown in Table 9.8. These are your similarity judgments.

Table 9.8. Hypothetical Rank Order of Business Schools

Pair	*Rank*
Harvard/Stanford	1
Stanford/Northwestern	2
Harvard/Northwestern	3
Northwestern/MIT	4
MIT/Stanford	5
Harvard/MIT	6

Now let us derive a map of your perceptions. Consider two coordinates as shown in Figure 9.11. Place a point on the figure for each school. Try to put schools close to each other that you judged as similar. Try to put far apart any schools you judged as dissimilar. Adjust the points so that the distance is smallest between Harvard and Stanford, the next smallest between Stanford and Northwestern, then Harvard and Northwestern, and so on; the distance between Harvard and MIT should be the largest. Figure 9.12 shows one map that meets these requirements. There are many maps that could be generated by these rules, but you have in Figure 9.12 one perceptual map based on a judgmental multi-dimensional scaling of similarity data.

In practice, the maps are based on more data and more stimuli and are less ambiguous. For example, Figure 9.13 shows an actual map derived from a random sample of 100 entering students at Northwestern. In this case, we might name the dimensions "realism/theoretical" and "outcomes" based on the location of the schools in the two dimensional space. Remember when interpreting this map that Figure 9.13 represents the subjective evaluations of students who have selected, but who have not yet experienced Northwestern.

We now consider the input data and the analytic techniques used to produce similarity maps.

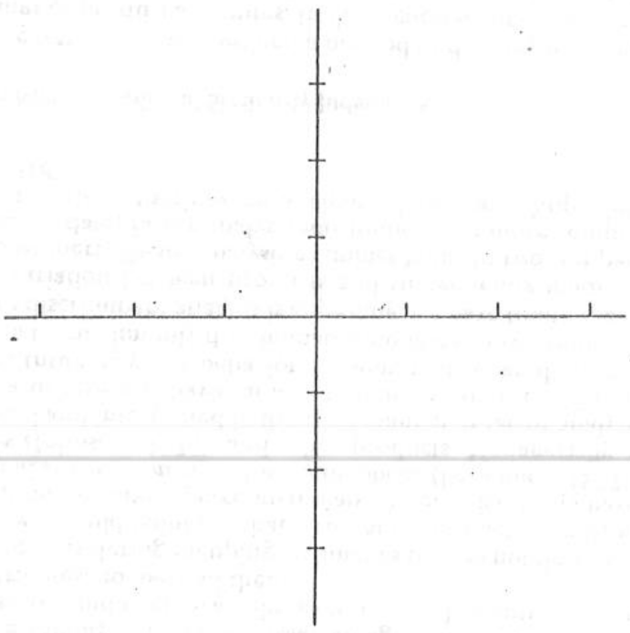


Figure 9.11. *Coordinates for Map*

Similarity Inputs. The input similarities commonly are obtained from:

- judgments of the similarity of a pair of products on scale (e.g., Figure 9.6b), or
- rank ordering pairs with respect to their similarity (e.g., Table 9.8)

These measures are tabulated in a matrix which has rows and columns designated by the products to be mapped and matrix entries which represent the similarities between products (see Table 9.9). This is called a "proximity matrix." For a market segment, each cell in the matrix contains the average of the scaled similarity judgments or the average of the rank orders for the appropriate pairs of products. In some cases the proximity matrix is generated by input in which the consumer rank orders all brands from most similar to most dissimilar to the brand in row one. These rank order values, when averaged across all individuals, provide the input for the first row of the proximity matrix. Next, all brands are rank ordered with respect to the brand in row two. The procedure of using each brand in turn as a reference, and rank ordering the others with respect to it is called the "anchor point" method and can be used to generate the full proximity matrix.

Table 9.9. Perceptual Distance (Measured in Dissimilarity)

	Personal Visit	Telephone	NBVT	CCTV	TTY
Personal Visit	—				
Telephone	10.5	—			
NBVT	7.3	8.2	—		
CCTV	8.5	13.8	5.8	—	
TTY	13.4	8.4	6.7	11.1	—

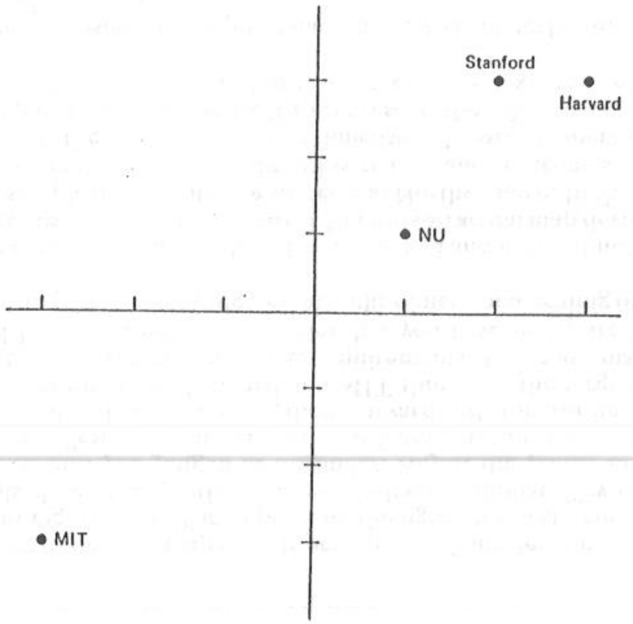


Figure 9.12. *One Map of Hypothetical Similarity Judgments*

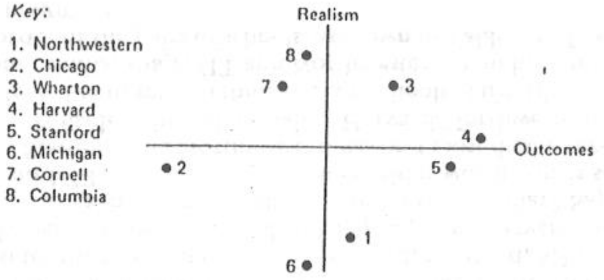


Figure 9.13. *A Similarity Map of Management Schools (adapted from Simmie, 1978)*

Producing the Perceptual Maps. In Figure 9.12 the perceptual map was produced by judgmentally shifting the points in the map to best represent the interproduct similarity. Similarity scaling algorithms automate this procedure. Given an initial starting configuration, the distance between points is measured in the usual way (Euclidean distance). A statistical measure called "stress" (see Appendix 9.2) is then applied to the map to determine how well the points reproduce the relative similarities in the proximity matrix. A large value for stress means a poor fit; a low value for stress means the interpoint distances are close to the similarities in the proximity matrix. The computer algorithm then shifts the points by a small amount in the direction that best reduces the stress. This continues until the stress has been reduced as much as is possible by the small movements. The resulting product positions for each product, j, on each dimension, k, produce the perceptual map. For example, Figure 9.14 shows a map derived by Green and Carmone (1970).

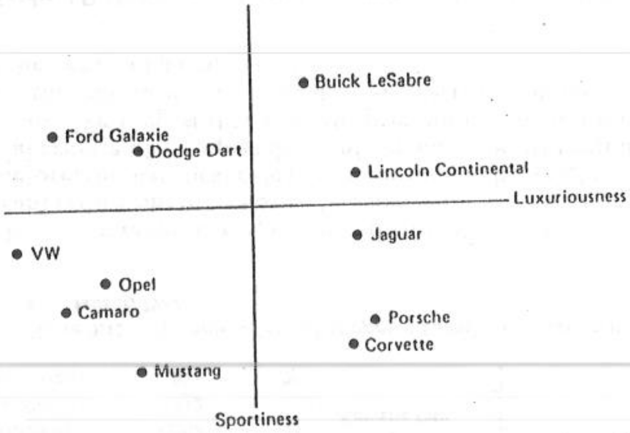


Figure 9.14. *Map of Consumer Perceptions of Autos (adapted from Green and Carmone, 1970, p. 60)*

A word of caution is in order because there are a minimum number of products needed to determine a perceptual map. Klahr (1969) shows by simulation that at least eight are needed for a good two-dimensional map. Green and Wind (1973) suggest that the number of dimensions, K, should be less than one-third the number of products, J. Thus, in certain product categories such as health care, transportation, and financial services, there may be too few stimuli for a map. Furthermore, even in categories such as deodorants, the evoked set for any given consumer may be too small for this technique. Thus, the manager is urged to proceed carefully when interpreting solutions with too few stimuli. One approach is to expand the evoked set with concept descriptions to get sufficient stimuli. Another is to use the factor analysis method of mapping described earlier.

Naming the Dimensions. Suppose we have determined the two-dimensional map in Figure 9.14. By examining the relative positions of the autos, one may name the dimensions. For example, the horizontal dimension seems to distinguish the Lincoln Continental from the Ford Galaxie, the Jaguar from the Volkswagen, and the Porsche from the Camaro. This dimension was named "luxuriousness." Similarly, the vertical dimension distinguishes the Galaxie from the Camaro, the Dart from the Mustang, and the Continental from the Jaguar. This dimension was named "sportiness." Similarity maps augment the manager's knowledge of a product category by combining the structure of the map with the manager's judgment. Used in this way, similarity maps provide an alternative measure of perception to complement factor analysis.

If a manager does not want to rely solely on judgment to name the dimensions and if attribute scale ratings are available, a technique called PROFIT (Carroll and Chang, 1964; Miller, Shepard, and Chang, 1964) can be used to name the dimensions by estimating the association between the similarity dimensions and the attribute ratings. The technique is a regression procedure with the dimension coordinates as the explanatory variables and the attribute scales as the dependent variables. For the metric version, the regression equation is:

$$(9.5) \qquad \bar{y}_{jl} = \sum_{k=1}^{K} D_{lk}\bar{x}_{jk} + \text{error}$$

where D_{lk} is the "directional cosine" between attribute l and dimension k, $\bar{y}_{jl}$ is the average of the attributes across consumers, and $\bar{x}_{jk}$ are the map coordinates of the product. The values of D_{lk} help indicate if the attributes are associated with a dimension. The concept is similar to that of factor loadings in the previous section. In fact, if ratings had been collected on a complete set of attributes, the products could be directly mapped by factor analysis and compared to the similarity scaling solution. For example, Figure 9.15 gives a two-dimensional PROFIT solution for a perceptual map of shopping locations serving the northern suburbs of Chicago. The dimensions were named "variety" and "quality vs. price," based on the underlined directional cosines.

Determining the Number of Dimensions. The perceptual maps in Figures 9.14 and 9.15 were produced by selecting the product positions such that the interpoint distances most nearly match the observed similarities shown in the "proximity matrix." The algorithms use the fit measure called stress to get the distances as close as possible and to judge the accuracy of a map. (See Appendix 9.2.) As we increase the number of dimensions, K, we increase the number of degrees of freedom and achieve a better fit of distance to dissimilarity. Thus, the stress value, S_K, decreases as the dimensions increase. When S_K is plotted against K, the resulting marginal changes in stress can be examined in the same spirit as in factor analysis, except that we are examining the stress value rather than the increase in incremental vari-

		Variety	Quality/ Price
1.	Layout of store	.217	.497
2.	Return and service	.318	.122
3.	Prestige of store	.297	.804
4.	Variety of merchandise	.929	.360
5.	Quality of merchandise	.295	.811
6.	Availability of credit	.880	−.085
7.	Reasonable price	.485	−.853
8.	"Specials"	.786	−.594
9.	Free parking	−.294	−.550
10.	Center layout	−.447	.036
11.	Store atmosphere	−.199	.452
12.	Parking available	−.463	−.478
13.	Center atmosphere	−.099	.480
14.	Sales assistants	−.052	.411
15.	Store availability	.872	.429
16.	Variety of stores	.921	.385

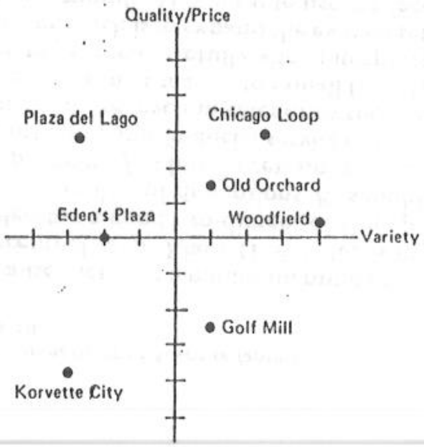


Figure 9.15. *Perceptual Map of Shopping Locations (Koppelman and Hauser, 1979)*

ance explained. In other words, increase the number of dimensions as long as significant reductions in stress can be achieved.

As before, the statistical rule is an indication to be weighed against the managerial criteria of interpretability of the map and its usefulness to the creative team. We suggest that you interpret both more and fewer dimensions than the statistical rule suggests and select the solution that is most useful to the design of a new product.

Individual Differences. Factor analysis produced measures of perceptions for each and every consumer. The above similarity maps are average maps. For the analysis of preferences (Chapter 10), we need estimates of each consumer's perceptions of the products in his evoked set. One method to achieve these estimates is to produce a separate map based on each consumer's similarities. Unfortunately, the computer analysis is expensive for similarity analysis and, as a result, individual level analysis would be prohibitively expensive for many reasonable sample sizes.

An alternative procedure, due to Carroll and Chang (1970) is INDSCAL. INDSCAL assumes that there is a common map, $\bar{x}_{jk}$, as above, but the individual perceptions, $\tilde{x}_{ijk}$, result from a stretching or a contracting of the map. Thus, the distance measure and corresponding stress measure are modified by differentially weighting the axes. (See Appendix 9.2 for equations.) The mathematics of INDSCAL differ from stress-based algorithms, but should produce similar estimates of average perceptions ($\bar{x}_{jk}$) and, in addition, estimate the individual perceptual coordinates that result from the differential stretching of dimensions.

Position of New Products. New products can be positioned in a similarity map by

- measuring new similarities for the new product, or
- judgmentally shifting the product directly in the perceptual map.

The pros and cons of each technique are similar to those discussed for factor analysis and depend on the product category and the stage of the design process.

Discussion and Summary. Similarity scaling has been applied to many product categories. For example, it has been used to map perceptions of autos (Green and Carmone, 1970), beer (Urban, 1975; Allaire, 1973), menu planning (Green and Wind, 1973), shopping locations (Koppelman and Hauser, 1979), and retail outlets (Singson, 1975). To use similarity mapping in a category:

- Have consumers evaluate existing products and/or concepts in the category according to their relative similarity and form an average similarity matrix for the group or for each consumer.
- Use one of the algorithms (MDSCAL 5, TORSCA 8, PARAMAP) to produce an average map in 2, 3, . . . dimensions.
- Use the statistical rule, based on stress and managerial judgment, to select the appropriate number of dimensions
- Name the dimensions based on the relative position of the stimuli in the perceptual map or use PROFIT to produce a matrix of directional cosines, D_{lk}, and interpret these to name the dimensions based on the attributes that load heavily.
- If desired, use INDSCAL to get individual level estimates of product perceptions.
- Obtain the new product positions by examining the perceptual map and selecting the strategy to produce the chosen position. Calculate this position by judgment or remeasurement.

The advantage of similarity maps is that they are based on measures that complement rather than depend upon the attribute measures. Thus, they provide an alternative measure of perception that can be used very early in design process to identify the relevant attributes or later to supplement the insight gained from perceptual maps developed from factor analysis.

One major disadvantage of similarity scaling is that it is difficult to use. The computer programs are less available and often require much data handling. FORTRAN programs are needed to use the full battery for analysis and the programs are quite expensive. When first introduced, there was a major concern among researchers that similarities be treated as non-metric (rank order only) data. Recent results (Green, 1975) have shown that the metric mapping methods yield similar results to non-metric scaling and are sufficient for most applications. Metric algorithms are often more available and certainly less expensive. In some cases, similarity maps provide predictions that are less accurate than those developed by factor analysis (Hauser and Koppelman, 1979; Simmie, 1978). This is probably due to the restrictive assumptions that are implicit when individual level perceptions are scaled. Nonetheless, they do provide an alternative view of the product category that can prove quite useful in new product design. For a further discussion of the advantages and disadvantages of similarity scaling, see Stefflre (1978).

Summary Comments on Analytical Mapping Methods

This section presented two analytic techniques to produce perceptual maps. Attribute-based methods like factor analysis are used to determine the basic perceptual structure by identifying the underlying cognitive structure in the attributes. These methods are easy and inexpensive to use, provide excellent managerial insight into the perceptual structure of the product category, and provide accurate measures of the perceptual dimensions which can be used in preference analysis and in forecasting the purchase potential of the new product. But to work well, factor analysis techniques depend on a well-specified and complete set of basic attribute scales.

Similarity maps provide alternative representations of the perceptual dimensions that do not require a prior specification of attributes. They are useful to gain further insight into the category. Since they are more expensive, more difficult to use, and may not predict as well as factor analysis, we feel they should be used as an augmentation to the perceptual analysis or as an exploratory method to ensure that the set of attribute scales are indeed completely and accurately specified.

We have tried to provide a description of each technique at a level that is sufficient for a basic understanding of the concept and at a level sufficient for the reader to use these techniques in new product design. Most readers will find that the mathematics become clearer as they try to actually implement the models. Others will find that they want more detail and want to see the equations behind the verbal descriptions. These readers are encouraged to read Appendices 9.1 and 9.2.

MANAGERIAL USE OF MAPS

Perceptual maps help managers understand a product category and recognize opportunities by providing a succinct representation of how consumers view and evaluate products in that category. The consumer intelligence achieved through this representation enables the new product team and the R&D team to work together and focus their creativity to achieve the desired position in the market. This focus on high potential positioning directs the design process and thus makes it more efficient and effective.

The emphasis in perceptual mapping is on psychological positioning, not physical characteristics. It is important to understand this distinction. Consumers make judgments on their own perceived reality. Thus, early in the design process it is extremely important to identify an opportunity, select a target positioning, and direct the product development accordingly. This does not mean that the physical characteristics of a product are not important. Physical characteristics (objective reality) and psychological appeals (e.g., advertising) act as cues upon which consumers base their perceptions (Brunswik, 1952). Thus, once a perceptual positioning is identified, the new product team can direct its effort toward achieving that positioning.

For example, in the transportation example it was found that the two new services, BTP and PPS, were positioned much better than the existing bus service. This is an encouraging result, but the product itself must back up this positioning. When implemented, BTP or PPS must be carefully engineered to provide the service promised in the concept statement. Furthermore, advertising and promotion must be used to communicate the core benefit proposition to consumers.

The use of concepts at the design phase is important since they test the core benefit proposition and the product's ability to fill a positioning opportunity. It also causes managers to consider how they can substantiate the positioning through physical product features and marketing tactics. The use of concepts is also very important when no products now exist in a product category. In this case you can use stretching concepts to fill out the new category. For example, in the health maintenance organization (HMO) case, no existing HMO was available to the target group. We created the category in the consumer's mind with the three new HMO concepts which were compared to existing care.

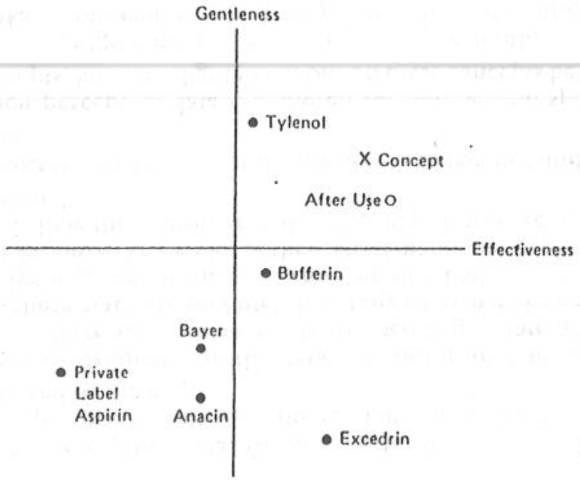


Figure 9.16. *Perception of New Pain Reliever After Home Use*

Maps are also useful to compare perceptions of a product concept to those of the actual product that is developed based on that concept. By collecting ratings after consumer use of the actual product, the fulfillment of the positioning can be measured. For example, Figure 9.16 shows the positioning of a new pain relief product after four weeks of use. Note the good match between the perceptions of the product concept and the perception of the actual physical product. When the concept and use perceptions do not match, either the product should be redesigned or the concept aligned to correspond with the actual product.

This chapter has discussed methods of mapping and how they can be used to identify gaps in markets, check positioning of concepts, and determine if physical products fulfill their core benefit promises. However, one critical managerial question has not been answered: "Which gap should we try to fill?" The next chapter shows how preference analysis is used to designate the best gap to fill.

REVIEW QUESTIONS

9.1 How would you determine the number of dimensions in a multidimensional perceptual mapping?

9.2 You are about to graduate with your MBA degree (or equivalent) and venture into the ominous job market. In this market, you view yourself as a new brand which needs proper positioning. Being an aggressive, hard-working and enterprising MBA, you decide your excellent grades and outstanding personality are not enough. A proper perceptual positioning is required at your interview. From some library research, you discover the following key attributes employers look for in potential employees:

A = Preparedness (0 – 10, 10 best)
B = Group Skills (0 – 10, 10 best)
C = Technical Skills (0 – 10, 10 best)
D = Ability to Handle Pressure (0 – 10, 10 best)

Your perceptions of yourself and your competitors follow,

	A	B	C	D
Brand 1	7	3	2	3
Brand 2	7	5	9	4
Brand 3	2	5	8	9
Yourself	6	2	8	6

a. How would you compete with Brand 1?
b. How would you compete with Brand 2?
c. How would your interview strategy depend on the behavioral model the interviewer uses to select candidates?

9.3 How do the inputs for factor analysis and nonmetric scaling differ?

9.4 Perceptual mapping techniques summarize the information contained in the perceptual data. Given a particular perceptual map derived from perceptual data, how do you know how much information was captured by the map?

9.5 When confronted with the details of factor analysis, a line manager states: "Sure analytical methods are used to generate perceptual maps and these maps are very useful. But my job is to make decisions. I must apply the perceptual maps to come up with real actions. It's not important for me to know a lot of theoretical mathematics. Academics worry about how the computer makes the map. I only worry about how to apply it."

Discuss the correctness of the manager's statements and their implications.

9.6 When perceptual data is gathered for only several specific stretcher concepts, how can slight variations on these concepts be positioned?

9.7 Draw a judgmental perceptual map for the toothpaste market. For banks in your community. Heavy duty industrial compressors.

9.8 Discuss the relationship between market definition and perceptual mapping.

9.9 Would a manager ever use both factor analysis and nonmetric scaling? Why?

9.10 How might a health maintenance organization be positioned in your community?

19

The Competitive Advantage of Nations

Michael E. Porter

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3

Determinants of National Competitive Advantage

The ways that firms create and sustain competitive advantage in global industries provide the necessary foundation for understanding the role of the home nation in the process. Yet this role is far from a simple one. Our search for a new way of understanding national advantage must begin from a number of premises.

First, the nature of competition and the sources of competitive advantage differ widely among industries and even industry segments. We must isolate the influence of the nation on the firm's ability to compete in specific industries and industry segments, and with particular strategies, rather than in broad sectors. We must allow for different sources of competitive advantage in different industries rather than rely on any single, overarching one such as labor costs or economies of scale. Since products are differentiated in many industries, we must explain why some nations' firms are better able to differentiate than others and not focus only on cost differences.

Second, global competitors often perform some activities in the value chain outside their home country. The globalization of competition does not negate the role of the home nation in competitive advantage but does change its character. It means that the task is not to explain why a firm operating exclusively in the nation is internationally successful, but why the nation is a more or less desirable *home base* for competing in an industry. The home base is where strategy is set, core product and process development takes place, and the essential and proprietary skills reside. The home base is the platform for a global strategy in the industry in which advantages drawn from the home nation are supplemented by those from an integrated, worldwide position.

Third, firms gain and sustain competitive advantage in international competition through improvement, innovation, and upgrading. Innovation, as I described earlier, includes both technology and methods, encompassing new products, new production methods, new ways of marketing, identification of new customer groups, and the like. The innovations that lead to competitive advantage involve an accumulation of small steps and protracted effort as much as dramatic breakthroughs.[1]

Firms gain advantage initially through altering the basis of competition. They sustain it through improving fast enough to stay ahead. This involves not only progress in executing existing advantages but also widening and upgrading the bases of competitive advantage over time. Often this involves the move to more sophisticated industry segments. Innovation and upgrading demand sustained investment both to perceive the appropriate directions of change and to carry them out.

As Schumpeter emphasized many decades ago, competition is profoundly dynamic in character. The nature of economic competition is not ''equilibrium'' but a perpetual state of change. Improvement and innovation in an industry are never-ending processes, not a single, once-and-for-all event. Today's advantages are soon superseded or nullified. At the core of explaining national advantage in an industry must be the role of the home nation in stimulating competitive improvement and innovation.[2] We must explain why a nation provides an environment in which firms improve and innovate and continue to do so faster and in the proper directions compared to their international rivals. The behavior required to create and especially to sustain competitive advantage is an unnatural act in many companies, as I emphasized in the previous chapter. We must understand what it is about a national environment that overcomes the natural desire for stability and jars firms into advancing.

Finally, firms that gain competitive advantage in an industry are often those that not only perceive a new market need or the potential of a new technology but move early and most aggressively to exploit it. Each significant structural change has the potential to nullify the competitive advantages of previous leaders, creating a new opportunity for shifting competitive position through an early response. We must explain why firms from particular nations move early and aggressively to exploit change in particular industries that foreshadows international needs.

Our task is to go beyond simply recognizing differences in competitive advantage among nations. The challenge is to explain them convincingly. It is now widely recognized that economies of scale, technological leads, and differentiated products create the conditions for trade: the nation whose firms gain them in an industry are able to export.[3] However, the ability to gain these advantages and sustain them is not a cause but an effect. The real question is *which firms* from *which nations* will reap them. We know that some nations' firms achieve technological superiority, produce more differentiated or higher-quality products, or products which are more attuned to customer needs than others. The question we must answer is why.

DETERMINANTS OF NATIONAL ADVANTAGE

Why does a nation achieve international success in a particular industry? The answer lies in four broad attributes of a nation that shape the environment in which local firms compete that promote or impede the creation of competitive advantage (see Figure 3–1):

1. *Factor conditions.* The nation's position in factors of production, such as skilled labor or infrastructure, necessary to compete in a given industry.
2. *Demand conditions.* The nature of home demand for the industry's product or service.
3. *Related and supporting industries.* The presence or absence in the nation of supplier industries and related industries[4] that are internationally competitive.
4. *Firm strategy, structure, and rivalry.* The conditions in the nation governing how companies are created, organized, and managed, and the nature of domestic rivalry.

The determinants, individually and as a system, create the context in which a nation's firms are born and compete: the availability of resources and skills necessary for competitive advantage in an industry; the information that shapes what opportunities are perceived and the directions in which resources and skills are deployed; the goals of the owners, managers, and employees that are involved in or carry out competition; and most importantly, the *pressures* on firms to invest and innovate.[5]

Firms gain competitive advantage where their home base allows and supports the most rapid accumulation of specialized assets and skills, sometimes due solely to greater commitment. Firms gain competitive advantage in industries when their home base affords better ongoing information and insight into product and process needs.[6] Firms gain competitive advantage when the goals of owners, managers, and employees support intense commitment and sustained investment. Ultimately, nations succeed in particular industries because their home environment is the most dynamic and the most challenging, and stimulates and prods firms to upgrade and widen their advantages over time.

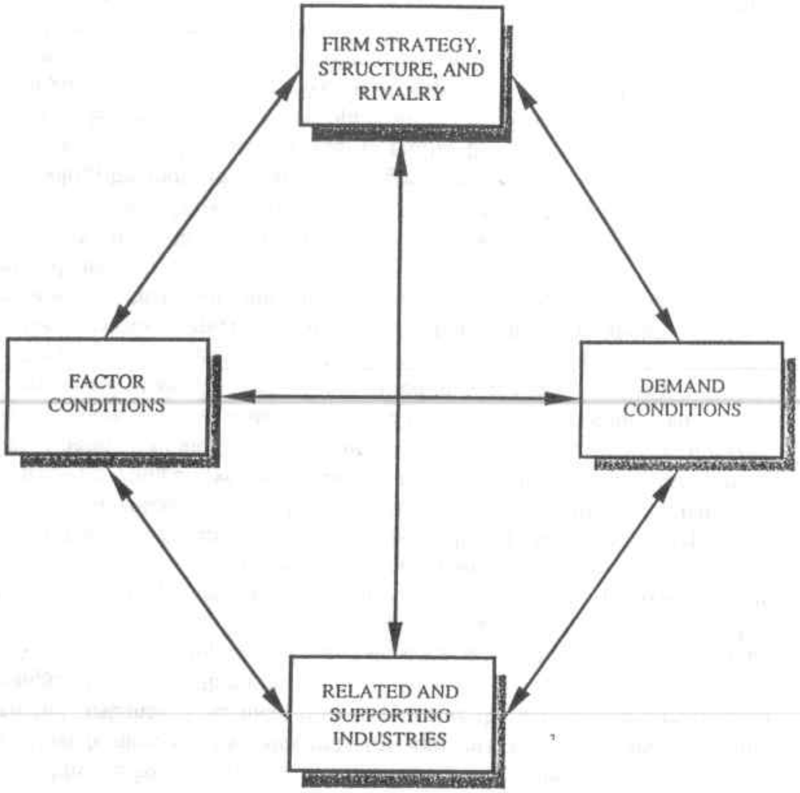

FIRM STRATEGY, STRUCTURE, AND RIVALRY
FACTOR CONDITIONS
DEMAND CONDITIONS
RELATED AND SUPPORTING INDUSTRIES

FIGURE 3–1 **The Determinants of National Advantage**

Nations are most likely to succeed in industries or industry segments where the national "diamond," a term I will use to refer to the determinants as a system, is the most favorable. This is not to say that all a nation's firms will achieve competitive advantage in an industry. In fact, the most dynamic the national environment, the more likely it is that some firms will fail, because not all have equal skills and resources nor do they exploit the national environment equally well. Yet those companies that emerge from such an environment will prosper in international competition.

The "diamond" is a mutually reinforcing system. The effect of one determinant is contingent on the state of others. Favorable demand conditions, for example, will not lead to competitive advantage unless the state of rivalry is sufficient to cause firms to respond to them. Advantages in one determinant can also create or upgrade advantages in others.[7]

Competitive advantage based on only one or two determinants is possible in natural resource-dependent industries or industries involving little sophisticated technology or skills. Such advantage usually proves unsustainable, however, because it shifts rapidly and global competitors can easily circumvent it. Advantages throughout the "diamond" are necessary for achieving and sustaining competitive success in the knowledge-intensive industries that form the backbone of advanced economies. Advantage in every determinant is not a prerequisite for competitive advantage in an industry. The interplay of advantage in many determinants yields self-reinforcing benefits that are extremely hard for foreign rivals to nullify or replicate.

Two additional variables can influence the national system in important ways, and are necessary to complete the theory. These are chance and government. Chance events are developments outside the control of firms (and usually the nation's government), such as pure inventions, breakthroughs in basic technologies, wars, external political developments, and major shifts in foreign market demand. They create discontinuities that can unfreeze or reshape industry structure and provide the opportunity for one nation's firms to supplant another's. They have played an important role in shifting competitive advantage in many industries.

The final element necessary to complete the picture is government. Government, at all levels, can improve or detract from the national advantage. This role is seen most clearly by examining how policies influence each of the determinants. Antitrust policy affects domestic rivalry. Regulation can alter home demand conditions. Investments in education can change factor conditions. Government purchases can stimulate related and supporting industries. Policies implemented without consideration of how they influence the entire system of determinants are as likely to undermine national advantage as enhance it.

The balance of this chapter will explore the influence of the determinants individually and jointly on the ability of a nation's firms to achieve competitive advantage in a particular industry. In the next chapter, I will turn to the way the determinants affect each other as a dynamic and evolving system.[8]

The basic unit of analysis for understanding national advantage is the industry. Nations succeed not in isolated industries, however, but in *clusters* of industries connected through vertical and horizontal relationships. A nation's economy contains a mix of clusters, whose makeup and sources of competitive advantage (or disadvantage) reflect the state of the economy's development. How entire national economies develop in international competitive terms will be a subject I will return to later.

FACTOR CONDITIONS

Each nation possesses what economists have termed *factors of production.* Factors of production are nothing more than the inputs necessary to compete in any industry, such as labor, arable land, natural resources, capital, and infrastructure. While the terminology may be awkward to some, it is so deeply embedded in the language of economics, and so vital to the theory of trade, that I will adopt it throughout this book.

The standard theory of trade rests on factors of production. According to the theory, nations are endowed with differing stocks of factors. A nation will export those goods which make intensive use of the factors with which it is relatively well endowed.[9] The United States, for example, has been a substantial exporter of agricultural goods, reflecting in part its unusual abundance of large tracts of arable land.

A nation's endowment of factors clearly plays a role in the competitive advantage of a nation's firms, as the rapid growth of manufacturing in low-wage countries such as Hong Kong, Taiwan, and more recently, Thailand attests. But the role of factors is different and far more complex than is often understood. The factors most important to competitive advantage in most industries, especially the industries most vital to productivity growth in advanced economies, are not inherited but are created within a nation, through processes that differ widely across nations and among industries. Thus, the stock of factors at any particular time is less important than the rate at which they are created, upgraded, and made more specialized to particular industries. More surprising, perhaps, is that an abundance of factors may undermine instead of enhance competitive advantage. Selective disadvantages in factors, through influencing strategy and innovation, often contribute to sustained competitive success.

FACTOR ENDOWMENT

To explore the role of factors in the competitive advantage of a nation, the concept must be made more meaningful to industry competition. Factors of production are often described in very broad terms such as land, labor, and capital, which are too general to bear on competitive advantage in strategically distinct industries.[10] Factors can be grouped into a number of broad categories:

- *Human resources:* the quantity, skills, and cost of personnel (including management), taking into account standard working hours and work ethic. Human resources can be divided into a myriad of categories, such as toolmakers, electrical engineers with PhDs, applications programmers, and so on.
- *Physical resources:* the abundance, quality, accessibility, and cost of the nation's land, water, mineral, or timber deposits, hydroelectric power sources, fishing grounds, and other physical traits. Climatic conditions can be viewed as part of a nation's physical resources, as can a nation's location and geographic size. Location, relative to other nations that are suppliers or markets, affects transportation costs and the ease of cultural and business interchange. For example, proximity to Germany has had an important historical influence on Swedish industry. The time zone of a nation relative to other nations may also be significant in a world of instantaneous global communications. London's position between the United States and Japan is often identified as an advantage in financial service industries, because London-based firms can do business with both Japan and the United States during a normal working day.

- *Knowledge resources:* the nation's stock of scientific, technical, and market knowledge bearing on goods and services. Knowledge resources reside in universities, government research institutes, private research facilities, government statistical agencies, business and scientific literature, market research reports and databases, trade associations, and other sources. A nation's scientific and other knowledge resources can be subdivided into a myriad of disciplines, such as acoustics, materials science, and soil chemistry.
- *Capital resources:* the amount and cost of capital available to finance industry. Capital is not homogeneous, but comes in various forms such as unsecured debt, secured debt, ''junk'' (high-risk, high-yield) bonds, equity, and venture capital. There are varying terms and conditions attached to each form. The total stock of capital resources in a country, and the forms in which it is deployed, are affected by the national rate of savings and by the structure of national capital markets, both of which vary widely among nations. The globalization of capital markets, and the large capital flows among nations, is slowly making national conditions more similar. However, substantial differences remain and are likely to do so indefinitely.
- *Infrastructure:* the type, quality, and user cost of infrastructure available that affects competition, including the transportation system, the communications system, mail and parcel delivery, payments or funds transfer, health care, and so on. Infrastructure also includes such things as the housing stock and cultural institutions, which affect the quality of life and the attractiveness of a nation as a place to live and work.

The mix of factors employed (known as factor proportions) differs widely among industries. A nation's firms gain competitive advantage if they possess low-cost or uniquely high-quality factors of the particular types that are significant to competition in a particular industry. Singapore's location on a major trading route between Japan and the Middle East has made it a center for ship repair. Swiss ability to deal with different languages and cultures (Switzerland contains German-, French-, and Italian-speaking regions) is an advantage in services such as banking, trading, and logistics management. Germany and Switzerland have pools of workers uniquely skilled in optics-related fields. Such a match between industries and the factors present in a nation is what the standard theory of comparative advantage is all about.

Yet the role of factor endowment is more complicated. Competitive advantage from factors depends on *how efficiently and effectively they are deployed.* This reflects the choices made by a nation's firms about how to mobilize factors as well as the technology (including procedures and routines) used to do so.[11] Indeed, the value of particular factors can be dramatically altered by the choice of technology. Not only how but *where* factors are deployed in an economy is crucial, because technological expertise and the most capable human resources can often be utilized in a variety of industries. The mere availability of factors is not sufficient to explain competitive success; indeed, virtually all nations have some attractive factor pools that have never been deployed in appropriate industries or have been deployed poorly. Other determinants in the "diamond" will be necessary to explain where factor advantage translates into international success, because these shape the way factors are deployed.

As I discussed earlier, most advanced and even newly industrialized nations today have comparable factor endowments in terms of infrastructure; many also have similar pools of high school- and even university-educated workers (Korea, for example, has nearly 100 percent literacy and over two hundred institutions of higher learning). At the same time, globalization has made local availability of some factors less essential. The modern global corporation can source factors from other nations by purchasing from them or locating activities there. Once again, it is not mere access to factors but the ability to deploy them productively that takes on central importance to competitive advantage.

A final point is that human resources, knowledge, and capital factors can be mobile among nations. Skilled people move among nations, as does scientific and technical knowledge. This mobility has been enhanced by greater international communication and easier movement.[12] Factor availability in a nation is not an advantage if the factors leave. Other determinants will be necessary to explain those nations to which mobile factors are attracted and where they can be most productively deployed.

HIERARCHIES AMONG FACTORS

To understand the enduring role of factors in competitive advantage, it is increasingly necessary to discriminate among types of factors. Two particularly important distinctions stand out. The first is that between basic and advanced factors. *Basic factors* include natural resources, climate, location, unskilled and semiskilled labor, and debt capital. *Advanced factors* include modern digital data communications infrastructure, highly educated personnel such as graduate engineers and computer scientists, and university research institutes in sophisticated disciplines.

Few factors of production are truly inherited by a nation. Most must be developed over time through investment, and the extent and difficulty of the required investment varies dramatically. The distinction between basic and advanced factors, while inevitably a matter of degree, seeks to capture these distinctions. Basic factors are passively inherited, or their creation requires relatively modest or unsophisticated private and social investment. Increasingly, such factors are either unimportant to national competitive advantage or the advantage they provide for a nation's firms is unsustainable.

The importance of basic factors has been undermined by either their diminished necessity, their widening availability, or ready access to them by global firms through foreign activities or sourcing on international markets. These same considerations make the returns available to basic factors low, irrespective of their location. An unskilled worker is increasingly vulnerable to pressures on wages, even if the worker is American or German. Basic factors may explain some of the trade *within* firms, reflecting the location of selected activities in various nations to tap into low factor costs. But they do not explain the location of the home base in most industries.[13]

Basic factors remain important in extractive or agriculturally based industries (such as timber and soybeans) and in those where technological and skill requirements are modest and technology is widely available. An example is the construction of civil projects (such as apartments and schools) with a low engineering content. Korean firms have enjoyed international success in such projects, based in part on the availability of low-cost and disciplined Korean labor. However, firms from nations with even lower wages are supplanting Korean firms, and competitors from more advanced nations such as Italy are sourcing cheap labor pools locally in nations where they bid on international contracts or from other developing countries (for instance, India), nullifying the Korean advantage. The result, combined with the decline in Middle East projects, is that the Korean construction industry is in sharp decline, an indication of how advantages due only to basic factors are often fleeting.

Advanced factors are now the most significant ones for competitive advantage. They are necessary to achieve higher-order competitive advantages such as differentiated products and proprietary production technology. They are scarcer because their development demands large and often sustained investments in both human and physical capital. The institutions required to create truly advanced factors (such as educational programs) themselves require sophisticated human resources and/or technology. Advanced factors are also more difficult to procure in global markets or to tap from afar via foreign subsidiaries. They are integral to the design and development of a firm's products and processes as well as its capacity to innovate, which best takes place at the home base and must be closely connected to the firm's overall strategy.

An important role for advanced factors is evident in numerous industries. Denmark's success in enzymes reflects a base of sophisticated scientific knowledge in fermentation, for example, and its success in furniture reflects a pool of university-trained furniture designers. America's unique stock of skilled personnel and scientific expertise in both computer hardware and software has yielded significant advantage not only in these industries but also in other U.S. industries such as medical electronics and financial services. Since the 1950s, Japan's large pool of engineers (reflecting a much higher number of engineering graduates per capita than almost any other nation) has been more important to success in numerous Japanese industries than the low wages of Japanese production workers.

It is important to recognize that a nation's advanced factors are often built upon basic factors. A supply of doctoral-level biologists, for example, requires a pool of talented university graduates in the field. This means that basic factor pools, while rarely a sustainable advantage in and of themselves, must be of sufficient quantity and quality to allow for the creation of related advanced factors.

The second important distinction among factors of production is their specificity. *Generalized* factors include the highway system, a supply of debt capital, or a pool of well-motivated employees with college educations. They can be deployed in a wide range of industries. *Specialized* factors involve narrowly skilled personnel, infrastructure with specific properties, knowledge bases in particular fields, and other factors with relevance to a limited range or even to just a single industry. Examples would be a scientific institute with expertise in optics, a port specialized in handling bulk chemicals, a cadre of skilled model makers for automobiles, or a pool of venture capital seeking to fund software companies.[14] More advanced factors tend also to be more specialized, though not in all cases. For example, highly skilled computer programmers, while an advanced factor pool, can be deployed in a wide range of industries.

Specialized factors provide more decisive and sustainable bases for competitive advantage than generalized factors. Generalized factors support only more rudimentary types of advantage. They are usually available in many nations, and tend to be more easily nullified, circumvented, or sourced through global corporate networks. Activities dependent on generalized factors (such as labor-intensive assembly operations requiring semi-skilled employees) can often be readily performed at a distance from the home base.

Specialized factors require more focused, and often riskier, private and social investment. They depend in many cases on already having a base of generalized factors. Both of these things make them scarcer. Specialized factors are usually necessary in the more complex or proprietary company activities, and they are necessary for more sophisticated forms of competitive advantage. This makes them integral to innovation. Specialized factors are necessary at a firm's home base and less effective at a foreign site. It is also frequently difficult for foreign firms to gain equal access to specialized factors (as well as to advanced ones). Non-Japanese firms, for example, have difficulty hiring the top Japanese engineering graduates or gaining equivalent access to local university research programs.

The most significant and sustainable competitive advantage results when a nation possesses factors needed for competing in a particular industry that are both advanced and specialized. The availability and quality of advanced and specialized factors determine the sophistication of competitive advantage that can potentially be achieved and its rate of upgrading. In optics, for example, an important reason why German firms have been able to steadily improve product performance and quality is the availability of graduates from special university programs in optical physics and a pool of highly skilled workers trained in specialized apprenticeship programs.

In contrast, competitive advantage based on basic/generalized factors is unsophisticated and often fleeting. It lasts only until some new nation, often one advancing up the development ladder, is able to match them.[15] These considerations help explain the apparent paradox I noted in the previous chapter. To sustain international competitive advantage, a nation's firms often must deliberately nullify or supplant today's basic factor advantages even though they still persist. What jars a nation's firms away from resting on basic/generalized factors becomes an important question we must address; other determinants in the "diamond" provide some of the answers.

There is an important dynamic character to factor advantage. The standard for what constitutes an advanced factor rises continually, as the state of knowledge, the state of science, and the state of practice improve. The knowledge of an electrical engineer who graduated in 1965, for example, is nearly obsolete today. Only through continuous training and upgrading of skills could the 1965 graduate have the same capability as one in 1990. Over time, master's and even doctoral training in the field have become necessary to work on frontier problems.

The standard for specialization also tends to rise continuously, as today's specialized factors tend to become tomorrow's generalized factors. A college graduate in electrical engineering was once a specialized factor, finding employment in relatively few industries. Today, these skills are needed in many industries and subfields have proliferated. The tendency for factors to lose specialization over time is particularly evident in scientific disciplines where subspecialties emerge, but is apparent as well in human resources, infrastructure, and even sources of capital.[16]

A factor pool is a depreciating basis for sustainable advantage unless it is constantly upgraded and specialized. Skilled human resources and knowledge resources, perhaps the two most important categories of factors for upgrading competitive advantage, are particularly depreciating assets, though infrastructure is not far behind. This suggests that possessing factor advantage at any one point in time is far from sufficient to explain sustained national success.

FACTOR CREATION

Another important distinction among factors, apparent in my earlier discussion, is whether they are inherited by a nation, such as its natural resources or location, or were created. Those factors most important in achieving higher-order and more sustainable competitive advantage, the more advanced and specialized ones, are created. A nation's telecommunications system or pool of microbiologists is created through *investments* made by individuals seeking to develop their skills, firms seeking the tools necessary for competing, and social institutions or governments hoping to benefit society or the economy.[17] Factor-creating mechanisms include public and private educational institutions, apprenticeship programs, government and private research institutes, and bodies providing infrastructure such as government-owned port authorities or community hospitals. The rising world standard for factors means that deriving competitive advantage from factors requires not just one-time investment but continual reinvestment to upgrade their quality, not to mention keeping the current pool of factors from depreciating.[18] Advanced and specialized factors demand the greatest, most sustained investment in the most difficult-to-make forms.

Nations succeed in industries where they are particularly good at creating and, most importantly, upgrading the needed factors. Thus nations will be competitive where they possess unusually high quality institutional mechanisms for specialized factor creation.[19] The factor-creating mechanisms in a nation are more important to competitive advantage than the nation's current factor pool, as numerous examples I will discuss will illustrate.

Furthermore, a *private sector* role in factor creation is necessary to attain factor advantage in most industries. Advanced and specialized factors are the most important to competitive advantage, and firms are best positioned to know which of these are necessary to compete in their industries. Government investments in factor creation usually concentrate on more basic and generalized factors. For example, investments in basic research, while important in seeding possibilities for commercial innovation, will not lead to competitive advantage unless transmitted to and further developed by industry. Government efforts to create advanced and specialized factors often fail unless they are closely coupled to industry, because government entities are notoriously slow or unable to identify new fields or the specialized needs of particular industries. A significant direct investment by firms, trade associations, and individuals in factor creation, as well as close coupling of private and public investments, are characteristic of internationally successful national industries.

There are sharp differences among nations in the areas in which investments in factor creation are made, as well as in the nature and quality of the factor-creating mechanisms. In Denmark, for example, there are two hospitals that specialize in treating patients and conducting research in diabetes. They are owned by the two world-ranking Danish insulin producers, Novo Industri and Nordisk Insulin. In Germany, apprenticeship programs exist in such specialized fields as printing, automotive assembly, and toolmaking. America has a highly developed network of agricultural colleges and an Agricultural Extension Service that widely disseminates improvements in agricultural technology. Computer science is another field in which there are numerous educational programs and research efforts.

Some national differences in the mechanisms for factor creation extend to many industries. In Japan, for example, factor creation tends to be private while in Sweden the public role is much greater. In Italy, much factor creation is informal through transfers of knowledge within extended families. The character of the institutional mechanisms prevalent in a nation for factor creation, which is partly a function of its social and political values and history, constrains to some extent the range of industries in which a nation can compete, as we will see.

No nation can possibly create and upgrade all types and varieties of factors. Which types are created and upgraded, and how effectively, depends heavily on the other determinants, such as home demand conditions, the presence of related and supporting industries, company goals, and the nature of domestic rivalry. Even the direction of government investments is strongly influenced by the other determinants. The presence of advanced and specialized factors in a nation is often not only a cause of national advantage but, at least in part, an effect.

SELECTIVE FACTOR DISADVANTAGES

Competitive advantage can grow out of *disadvantage* in some factors. In a narrow conception of international competition, competitive advantage results from factor abundance and disadvantages in factors cannot be overcome because technology is taken as a given. In actual competition, however, the abundance or low cost of a factor often leads to its inefficient deployment.[20] In contrast, disadvantages in *basic* factors, such as labor shortages, lack of domestic raw materials, or a harsh climate, create pressures to innovate around them. A steady rise in the nation's exchange rate can have the same effect.[21] The result is that the firm's competitive advantage can be upgraded and made more sustainable. What is a disadvantage in a narrow conception of competition can become an advantage in a more dynamic one.

Italian steel producers, for example, faced high capital costs, high energy costs, and no local raw materials. Privately owned firms (such as Grupo Lucchini) were concentrated in the area around Brescia in northern Lombardy, while state-owned producers were mostly in the south, near major ports. Private firms faced high logistical costs, due to distance from ports and an inefficient (and state-owned) Italian transportation system. The result was the pioneering of mini-mill technology, in which Brescia-area steel producers have emerged as perhaps the world leaders. Mini-mills require modest capital investment, use less energy, and employ scrap metal as the feedstock. They are efficient at small scale and allow producers to locate production facilities close to buyers and sources of scrap. Italian firms (such as Danieli) are not only important mini-mill operators but have also become world leaders in selling equipment for mini-mills.

The need for factors, particularly basic and generalized factors such as semiskilled labor or local raw materials, can often be circumvented, eliminated, or reduced through innovation. Automation reduces labor content, for example, while new materials eliminate the need for other materials. The returns from factor-saving innovations frequently far exceed their cost,[22] sometimes by yielding second-order benefits (for example, reducing labor content may well reduce the rate of defects and raise product quality) that are sometimes hard to anticipate.

Innovations to circumvent selective disadvantages not only economize on factor utilization but can create new factor advantages, because a nation's firms will innovate to offset selective disadvantages in ways that play to local strength, such as using available local infrastructure, materials, or types of labor. Most importantly, however, innovating around basic factor disadvantages leads firms to *upgrade* by developing more sophisticated competitive advantages (such as proprietary technology or economies of scale due to more automated facilities) that can be sustained longer and which may also support higher prices. At the same time, pressures are created to upgrade and specialize more rapidly other factors such as skilled human resources or infrastructure in order to keep pace.

A sports analogy illustrates some of these points. Some nations that have excelled in slalom skiing, such as Sweden, do not have large mountains at home with long ski runs. Instead, they have relatively small mountains and short runs. Aspiring skiers, to make such hills more interesting, make many turns and are pushed to refine their technique.

The role of selective factor disadvantages results from the fact that the rate and direction of improvement and innovation is a function of attention and effort. Firms have numerous avenues for innovation and face much uncertainty about all the possible directions and their payoffs. Innovation is disruptive. Firms concentrate their attention on those avenues they perceive to be the most promising, and particularly on those that address problems seen as the most pressing.

Innovation to offset selective weaknesses is more likely than innovation to exploit strengths. Selective disadvantages create visible bottlenecks, obvious threats, and clear targets for improving competitive position. They prod or force a nation's firms into new solutions.[23] This theme, that pressure instead of abundance or a comfortable environment underpins true competitive advantage, will resonate throughout this book.

Disadvantages in basic factors are part of what jars firms away from resting on basic factor costs and into seeking higher-order advantages. In contrast, local abundance of basic factors lulls firms into complacency and deters the application of advanced technology. The resulting competitive advantages are often fleeting as so is productivity growth.

Factor disadvantages that stimulate innovation must be *selective* to motivate and not discourage, involving some but not all factors. A lack of pressure means there is rarely progress, but too much adversity leads to paralysis. An intermediate level of pressure, involving a balance of advantage in some areas and disadvantage in selected others, seems to be the best combination for improvement and innovation.[24]

Selective disadvantages best contribute to competitive advantage when they *send the proper signals* about circumstances that will ultimately confront firms elsewhere. A nation's firms then become early and aggressive movers in dealing with problems that will be widespread. A good example is Switzerland. It was the nation that experienced perhaps the first labor shortages in the post–World War II period and was reluctant to allow immigration. This led Swiss firms earlier than most to upgrade labor productivity and seek higher value, and more sustainable, market segments. Firms from other nations had access to more ample supplies of workers and placed their attention elsewhere.

The most obvious case of selective disadvantage is where local firms experience high absolute cost of a factor compared to foreign rivals. Japanese firms in a variety of industries, for example, faced extremely high land cost and severe factory space constraints. To circumvent these difficulties, they created just-in-time and other space-saving production techniques that also dramatically reduced needed inventory. Factor shortages, unavailability, or strong restrictions on the use of particular factors are as or more stimulating to innovation as high factor costs.

Innovation will also be stimulated if a nation's firms experience trends in factor costs early, even if other nations catch up. Particularly rapid or visible changes in the cost or availability of factors in a nation compared with others will also lead local firms to act earlier, since the importance of selective disadvantages lies in focusing attention and effort on addressing important perceived problems or constraints. Finally, high *relative* cost of a factor in a nation may stimulate innovations that circumvent it, even if the absolute cost of the factor is comparable to that in other nations. If a nation faces a high relative cost of unskilled to skilled labor, for example, local firms may place more attention on eliminating unskilled labor even if wage rates are lower than elsewhere. This has taken place, for example, in a variety of Italian industries where firms are among the most automated in the world (Italy is also a leader in factory automation equipment).

Selective factor disadvantages were prevalent in the industries we studied, and were important to the process by which nations' firms gained competitive advantage. Around the turn of the twentieth century, for example, BASF and Hoechst (Germany) spent many years developing a synthetic indigo dye to reduce dependence on imported natural dye unavailable at home. There was less pressure to innovate in Britain because of large supplies of natural indigo in the colonies. Lack of domestic raw materials was a frequent spur to innovate in a national industry.

Scarce, expensive, or difficult-to-fire labor was another prominent driver of innovation, especially in German, Swiss, Swedish, Japanese, and Italian industries. Lifetime employment, or constraints on firing workers, made Japanese, Swedish, and Italian firms careful about hiring and prone to automate. They also moved rapidly toward more differentiated market segments.

Selective disadvantages in climate or geography were also common stimuli to innovation. Swedish firms are leaders in prefabricated housing, for example, in part because of a short building season and very high wages for construction workers. This put a premium on designs that were efficient to construct. Distance from markets has led to a disproportionate rate of innovation in logistical methods in Japan and Sweden.

The positive role of selective disadvantages in stimulating innovation, however, depends on the other determinants. Firms must have access to appropriate human resources to support innovation in the industry, for example, and supportive home demand conditions. Another precondition is goals that lead to sustained commitment to the industry. Without commitment, firms will harvest or cede competitive position in the face of disadvantages rather than innovate. Also particularly significant is the presence of active domestic rivalry, which pressures firms to seek more durable advantages over their local rivals.

Other parts of the "diamond," then, influence whether a nation's firms innovate around selective factor disadvantages rather than take the easy but less desirable solution (for competitive advantage) of sourcing factors abroad. When these broader conditions for innovation are not present, selective factor disadvantages will not work. Faced with high relative labor costs, for example, American consumer electronics firms moved to locate labor-intensive activities in Taiwan and other Asian countries, leaving the product and production process essentially the same. This response led only to labor cost parity, instead of upgrading the sources of competitive advantage. Japanese rivals, facing intense domestic rivalry and a mature home market, set out instead to eliminate labor through automation. Doing so involved reducing the number of components which further lowered cost and improved quality. Japanese firms were soon building assembly plants in the United States, the place American firms had sought to avoid.

The example of the Dutch cut flower industry, while drawn from a nation we did not study in depth, is so clear an example summarizing the influence of selective factor disadvantage that I could not resist including it.[25] Holland, by far the world leader, exports over $1 billion of cut flowers per year despite its cold, grey climate. This selective disadvantage has led to innovations in glass house growing techniques, new strains of flowers, energy conservation, and other techniques that have created sustainable competitive advantages in the industry. Dutch innovation proceeded in a direction that took advantage of Holland's large supply of natural gas, illustrating how the directions of innovation around disadvantages in one factor often reflect the supply of others.

The impetus of an inhospitable climate forced an approach to competing in the industry that is much more favorable to upgrading advantage than traditional cultivation techniques. It has allowed the Dutch industry to achieve differentiation based on freshness, quality, and variety. Yet the Dutch success and ability to upgrade advantage have also depended heavily on the other determinants. One is the existence of highly specialized research organizations in flower cultivation, packaging, and shipping (such as the Sprenger Institute and the Aalsmeer Research Station). Holland has developed a highly efficient infrastructure in flower handling and air freight.[26] A strong home demand was present in Holland for fresh flowers year-round that triggered initial interest in the industry by entrepreneurs. Active domestic rivalry has taken place at the grower, auction house (there are ten in Holland), and marketer levels. Finally, specialized home-based suppliers of important inputs such as glass houses, who also sell internationally, have contributed to upgrading.

DEMAND CONDITIONS

The second broad determinant of national competitive advantage in an industry is home demand conditions for the industry's product or service. Home demand conditions had some influence in nearly every industry we studied.[27] While home demand, through its influence on economies of scale, can confer static efficiencies, its far more important influence is dynamic. It shapes the rate and character of improvement and innovation by a nation's firms. Three broad attributes of home demand are significant: the composition (or nature of buyer needs) of home demand, the size and pattern of growth of home demand, and the mechanisms by which a nation's domestic preferences are transmitted to foreign markets. The significance of the latter two is contingent on the first. The *quality* of home demand, in terms that I will describe, is more important than the *quantity* of home demand in determining competitive advantage.

Home Demand Composition

The most important influence of home demand on competitive advantage is through the mix and character of home buyer needs.[28] The composition of home demand shapes how firms perceive, interpret, and respond to buyer needs. Nations gain competitive advantage in industries or industry segments where the home demand gives local firms a clearer or earlier picture of buyer needs than foreign rivals can have.[29] Nations also gain advantage if home buyers *pressure* local firms to innovate faster and achieve more sophisticated competitive advantages compared to foreign rivals. Dissimilarities among nations in the nature of home demand underlie these benefits.

It might seem that home demand would be rendered less significant by the globalization of competition, but this is not the case. The home market usually has a disproportionate impact on a firm's ability to perceive and interpret buyer needs for a number of reasons.[30] The first is simply attention. Attention to nearby needs is the most sensitive, and understanding them is the least costly. Product development teams, as well as the managers who approve new products, are based with rare exceptions in the home market. Pride and ego also focus attention on success in meeting needs in the home market. Finally, pressures from buyers to improve products are most acutely felt in the home market, where proximity and cultural similarity make for clearer communications.

The importance of the home market goes beyond greater attention, however. Firms are better able to perceive, understand, and act on buyer needs in their home market and tend to be more confident in doing so. Understanding needs requires access to buyers, open communication between them and a firm's top technical and managerial personnel, and an intuitive grasp of buyers' circumstances. This is hard enough with home buyers. It is extremely difficult to achieve, in practice, with foreign buyers because of distance from headquarters and because the firm is not truly an insider with full acceptance and access.[31] Even if a subsidiary is able to gain sufficient access to fully understand foreign buyer needs and how they are changing, it is a daunting task to communicate them credibly to headquarters. Where foreign and home market needs diverge, signals from the home market usually dominate. A product's fundamental or core design nearly always reflects home market needs.[32] All these considerations make proximity to the right type of buyers of decisive importance in national competitive advantage. Selling to foreign buyers is not a good substitute. There are three characteristics of the composition of home demand particularly significant to achieving national competitive advantage:

Segment Structure of Demand. The first is the segment structure of home demand, or the distribution of demand for particular varieties. In most industries, demand is segmented. In commercial aircraft, for example, there is a range of aircraft sizes and configurations which appeals to airlines with differing route structures and other circumstances. Some segments are more global than others.

A nation's firms are likely to gain competitive advantage in global segments that represent a large or highly visible share of home demand but account for a less significant share in other nations. In electrical transmission equipment, for example, Sweden is a leader in high voltage distribution (HVDC) equipment, used for transporting high voltage over long distances. This reflects large relative demand in this segment in Sweden because of the remoteness of Sweden's energy-intensive steel and paper industries as well as the fact that sources of electric power in Sweden are far removed from southern population centers.

It has been recognized that size of segments may be important to national advantage where there are significant economies of scale or learning.[33] Nations in which a segment is largest in absolute terms may gain advantages in reaping economies of scale. However, the absolute size of segments within a nation plays a complicated role in competitive national advantage, because firms compete globally and can achieve a large scale even if their home market is small.[34]

The more significant role of segment structure at home is in shaping the attention and priorities of a nation's firms. The relatively large segments in a nation receive the greatest and earliest attention by the nation's firms. Smaller segments, or those perceived as less desirable, are frequently accorded lower priority in allocating product design, manufacturing, and marketing resources, especially in a new or developing industry where firms are preoccupied with creating and perfecting the basic product and keeping up with growth in demand. Segments that are deemed less profitable (for example, those at the low end of the market, those perceived as oddball or unusual or those without the possibility for selling profitable ancillary services) will also be ignored. Such segments in the nation are prone to being preempted by foreign competitors. Even if they are not preempted, firms are more likely to cede such "less desirable" segments to foreign rivals over time.

A good example of these considerations is Airbus Industries' entry into commercial airliners. Airbus identified a segment of the market that had been ignored by Boeing and other U.S. manufacturers, a relatively large-capacity plane for short hauls. Such a need was quite significant in Europe with its numerous capital cities within short flying distances and served by few national airlines. American cities are more widely dispersed and the volume of traffic between most city pairs spread over a generally larger number of competitors could be met with a 100- to 200-seat aircraft. The attention of the European consortium was focused heavily on a segment which U.S. manufacturers viewed as secondary.

Another example is microwave equipment, where Japan's mountainous terrain makes microwave transmission an attractive alternative to copper cables. Japan had to rebuild its infrastructure after World War II, and Nippon Telephone and Telegraph aggressively built microwave capacity. Microwave technology was not well developed before the war, and nations whose infrastructure had not been severely damaged were heavily invested in cable. The large relative Japanese home demand for microwave led to intense attention to this technology and, ultimately, to a strong international position. Similarly, hydraulic excavators represent by far the most widely used type of construction equipment in the Japanese home market, whereas in other advanced nations its share of sales volume is far lower. Excavators are one of the few segments where Caterpillar does not hold a major share of the world market, and there is a large group of vigorous Japanese international competitors.

One implication of the importance of segment structure is that small nations can be competitive in segments which represent an important share of local demand but a small share of demand elsewhere, even if the *absolute* size of the segment is greater in other nations. Swiss firms, for example, have long held a leading position in equipment and services for tunnelling, where unusual Swiss needs are obvious. Similarly, Swedish firms have long been leaders in equipment and rock drills for mining in very hard rock, the dominant geology encounterd in Swedish mining. American firms lead in rotary mining equipment, used principally for oil and gas exploration and production. This is the dominant segment in the United States. Firms from smaller nations often employ global focus strategies in which they concentrate on such a segment of the market worldwide.

In some industries, the *range* of segments in the home market influences competitive advantage. In highly engineered or tailored products and services, exposure to a wide range of significant segments at home provides experience that can be used in entering foreign markets. In commercial air-conditioning equipment, there are many segments reflecting differences in climate, building type, and end-user industry. One of the advantages of U.S. firms was that almost every climatic and industry condition encountered in other countries in commercial air-conditioning had already been experienced somewhere in the United States.

Particularly valuable in a nation is the presence of large segments that require more sophisticated forms of competitive advantage. Their presence provides a visible path for local firms to upgrade their competitive advantage over time, and positions in such segments are more sustainable.

Sophisticated and Demanding Buyers. More important than the mix of segments *per se* is the nature of home buyers. A nation's firms gain competitive advantage if domestic buyers are, or are among, the world's most sophisticated and demanding buyers for the product or service. Such buyers provide a window into the most advanced buyer needs. Proximity, both physical and cultural, to these buyers helps a nation's firms perceive new needs. It also allows close contact in the development process and, when buyers are companies, creates opportunities to engage in joint development work in ways that are difficult for foreign firms to match.

Sophisticated and demanding buyers pressure local firms to meet high standards in terms of product quality, features, and service. In Japan, for example, consumers are highly sophisticated and knowledgeable in purchasing audio equipment. Audio equipment is a status item, and Japanese consumers gather extensive product information and want the latest, best models. Their desire for quality leads to rapid improvement by manufacturers, and their desire to have the latest features leads to rapid saturation of new models.[35] The presence of sophisticated and demanding buyers is as, or more, important to sustaining advantage as to creating it. Local firms are prodded to improve and to move into newer and more advanced segments over time, often upgrading competitive advantage in the process.

Buyers are demanding where home product needs in an industry are especially stringent or challenging because of local circumstances. In very large diesel truck engines, America's vast road network and spread-out population creates unique needs for performance. Cummins, Caterpillar, and Detroit Diesel are strong international competitors. In residential air-conditioning, Japanese firms have penetrated international markets with their compact, quiet units. Air-conditioning is much needed in Japan because of the hot and humid summers. Japanese homes are small and tightly packed together, however, and a bulky, noisy air-conditioner is simply unacceptable. This, along with high energy costs, pushed Japanese firms to pioneer energy-saving rotary compressors. This example can be extended to a number of other Japanese industries. Japanese home market conditions lead to an intense effort to innovate by producing products that are *kei-haku-tan-sho* (light, thin, short, small). The result is a constant stream of compact, portable, multifunctional products that are well accepted internationally.

Industrial buyers sometimes are unusually demanding because they face *selective factor disadvantages* in competing in their own industry. A good example is the American oil industry. The continental United States has been intensely drilled, and wells are being drilled in increasingly difficult and marginal fields. The pressure has been unusually great for American oil field equipment suppliers to perfect techniques that minimize the cost of difficult drilling and ensure full recovery from each field. This has pushed them to advance the state of the art and sustain strong international positions. The challenge of helping home buyers surmount such factor disadvantages begets competitive advantage in the nation's industries that supply them.

A nation's buyers can have unusually stringent needs for a wide variety of other reasons as well, including geography, climate, natural resource availability, taxation, tough regulatory standards, and social norms. High taxes on gasoline in Europe, for example, have contributed to strength in high-horsepower, low-displacement engines which are fuel-efficient compared to larger engines of equal horsepower. Buyers also tend to be more demanding when facing competition than if they are tightly regulated or hold a monopoly. Competitive pressure stimulates more attention to new products and creates greater efforts to control costs, reflected in demands placed on suppliers. The heavily private and decentralized health care delivery system in the United States, for example, has, by stimulating innovation, been a major advantage for American suppliers of medical equipment and supplies. Privatization of state-owned firms often stimulates them to experiment more in purchasing.

The role of sophisticated and demanding buyers can be played by *distribution channels* as well as by end users.[36] In the United States, for example, the presence of large powerful chains of eyewear stores has stimulated American contact lens producers to cut costs, create new forms of customer service, and rapidly introduce new product varieties. Italy is another good case. There, such products as shoes, clothing, furniture, and lighting are sold in greater proportion through specialty stores than in other nations. These sophisticated retailers are a major force pressuring Italian manufacturers to constantly introduce new models and reduce prices and thus costs.

One important clue to where a nation's buyers are sophisticated and demanding is national passions. Japanese have long been particularly oriented toward using pictures to record travels and family events, dating back well before World War II. They are also very sophisticated camera buyers, and the Japanese camera industry now leads the world. Japanese also pay great attention to writing instruments, because nearly all documents have until recently been handwritten in Japan due to the impracticality of typewriters in reproducing Japanese characters; penmanship is an important indication of education and culture. Japanese firms have been the innovators and have become world leaders in pens.

Germans cherish their cars and polish them on Sunday between bouts of high-speed driving on the autobahns, which have no speed limit because Germans would not tolerate one. The popular slogan is "free speed for free people." Success in durable, high-performance cars is no surprise. Americans have an unusual interest in popular entertainment (sports, movies, television, records), contributing to American world leadership in these industries. The British are known for gardening, and British firms are world class in garden tools. Italians are known for their sophistication about clothes, food, and fast cars, all areas of Italian international success. National passions translate into internationally competitive industries with striking regularity. Sometimes these passions are not only the cause but also an effect of the presence of a highly competitive national industry. More on this in Chapter 4.

Anticipatory Buyer Needs. A nation's firms gain advantages if the needs of home buyers anticipate those of other nations. This means that home demand provides an early warning indicator of buyer needs that will become widespread. The benefit is important not only for new products but on an ongoing basis, because it stimulates continuous upgrading of products over time and the ability to compete in emerging segments. Anticipatory demand is sometimes another benefit of having the world's most sophisticated buyers at home, because sophisticated buyers are often (though not always) early adopters of new product and service varieties that will come to be demanded elsewhere.

Japanese firms in a variety of industries, for example, were confronted early with buyers very concerned about energy costs, a concern elevated by a stream of government reports, widespread publicity, and some early regulations governing the allowable energy consumption of products. Japanese firms began working early to improve the energy efficiency of products, well in advance of the rest of the world which woke up after the first oil shock (U.S. energy costs were held artificially low, in contrast).

Stringent home needs benefit national competitive advantage *only if* they anticipate needs elsewhere. If they are idiosyncratic to the nation, they will undermine the competitive advantage of local firms. If home demand is slow to reflect new needs, particularly sophisticated needs, a nation's firms are at a disadvantage.

Anticipatory buyer needs may arise because a nation's political or social values foreshadow needs that will ultimately emerge elsewhere. Sweden's long-standing high level of concern for handicapped persons, for example, has spawned an industry supplying products for them that is becoming a world-class industry. A nation's home demand anticipates or lags behind world demand in part because the values embodied in its culture are spreading or are in retreat. American desire for convenience is spreading, benefiting international success in fast food, consumer packaged goods, and other industries. American appetite for credit (coupled with strengths in important technologies such as information technology used in credit scoring and validations) has led to commanding international leadership in credit cards with the likes of American Express, Visa, MasterCard, and Diners Club. Conversely, Scandinavian concern for social welfare and the environment tends today to be ahead of that in the United States. Swedish and Danish firms have achieved success in a variety of industries where this heightened environmental concern anticipates foreign needs, such as in water pollution control equipment.

Factor conditions sometimes play a role in the timing of demand. Danish dependence on imported energy, coupled with prevailing climatic conditions and government support for alternative energy sources, are important reasons why Denmark developed early demand for windmills. Danish firms have emerged as early leaders in producing and exporting them.

Regulations which lead those of other nations can also benefit competitive advantage. For example, Swedish regulations have long permitted very large and heavy trucks. Sweden has internationally prominent forestry and mining sectors located in the rugged northern regions of the nation. The prevalence of hauling timber and other materials over long distances necessitates large, extremely durable trucks. This is a typical example of how local regulations often strongly reflect local needs and values. Sweden has two leading international competitors in heavy trucks, Volvo and Saab-Scania, who have benefited from the Swedish context because large size and durability have been increasingly demanded abroad. At the same time, regulations in other nations limiting the size and weight of trucks have eased.

DEMAND SIZE AND PATTERN OF GROWTH

Provided that its composition is sophisticated and anticipates international and not just domestic needs, the size and pattern of growth of home demand can reinforce national advantage in an industry. The size of the home market has been prominent in discussions of national competitiveness,[37] though there is little agreement about the direction of causality or the reasoning. Some authors argue that a large home market is a strength, because of the existence of economies of scale. Other commentators see it as a weakness, reasoning that limited local demand forces firms to export, important to competitive advantage in global industries. Switzerland, Sweden, Korea, and even Japan are often-noted examples of nations where limited local demand led to pressures to export.[38] Home market size proves to play a complex role in national advantage, and other aspects of home demand are as or more important.

Size of Home Demand. Large home market size can lead to competitive advantage in industries where there are economies of scale or learning, by encouraging a nation's firms to invest aggressively in large-scale facilities, technology development, and productivity improvements. One must be careful, however, because global firms sell in many nations. Investments in large-scale plants or substantial R&D need not rely only on local demand, unless there is widespread protection that limits exports. The many world-class Swiss and Swedish industries attest to the ability of highly international firms to obtain scale from many different foreign markets.

The most important question in industries characterized by substantial economies of scale is which nation's firms will move first to reap them in producing products that will also meet foreign buyer needs. This is a function of the other determinants, especially home demand composition. The size of home demand may be significant in some industries, however. Local firms often enjoy some natural advantages in serving their home market compared to foreign firms, a result of proximity as well as language, regulation, and cultural affinities (even, frequently, if foreign firms are staffed with local nationals). Preferred access to a large domestic customer base can be a spur to investment by local firms. Home demand may be perceived as more certain and easier to forecast, while foreign demand is seen as more uncertain even if firms think they have the ability to fill it. In our case studies, there was nearly universal emphasis in investment decisions on domestic demand, especially early in an industry's development.

Home market size is most important to national competitive advantage in certain kinds of industries (or segments), notably those with heavy R&D requirements, substantial economies of scale in production, large generational leaps in technology, or high levels of uncertainty. In such industries, the proximity of large home demand is particularly comforting in making investment decisions.

Large home demand is not an advantage, however, unless it is for segments that are demanded in other nations. For example, the vast U.S. agricultural sector has led to a large home demand for harvesting combines. Because of differences in climate, terrain, and farming practices as well as American regulations which allowed wider combines on public streets, however, combines designed for the United States were not practical in Europe. Claas, a German firm, was the pioneer in introducing more efficient and narrower combines that could work in the more varied (and difficult) conditions in Europe. It became the European leader, despite the European presence of established U.S. firms. In the highly scale-sensitive commercial aircraft industry, in contrast, the large U.S. home demand (due to a large and dispersed population) yielded a substantial advantage because American needs were similar but arguably more advanced that those elsewhere in most segments.

Sometimes, smaller countries represent very large markets for particular products, given local conditions. For example, demand for icebreakers and cargo vessels with icebreaking capacity in Finland is disproportionately high due to Finnish weather conditions, its dependence on trade, and its special access to the nearby Russian market (with its own icebreaker demand). While local demand for ships in Finland is insignificant in world terms, such is not at all the case in the segment where Finnish yards concentrate. Since home demand for icebreakers is also stringent and sophisticated, Finnish shipbuilders are strong internationally in this area.

Home market size is an advantage if it encourages investment and reinvestment, or dynamism. Because a large home market can also provide such ample opportunities that firms see little need to pursue international sales, however, it may undermine dynamism and become a disadvantage. Other determinants, notably the intensity of domestic rivalry, are decisive in whether a large home market proves to be a strength or a weakness.

Number of Independent Buyers. The presence of a number of independent buyers in a nation creates a better environment for innovation than is the case where one or two customers dominate the home market for a product or service. A number of buyers, each with its own ideas about product needs and ideally under competitive pressure itself, expands the pool of market information and motivates progress. Serving one or two dominant customers, in contrast, may provide some static efficiencies but will rarely create the same level of dynamism.

A number of independent home buyers also stimulates entry and investment in the industry by reducing the perceived risk that a firm will be shut out of the market and limiting the power of a dominant buyer to bargain away all profits. I will discuss these issues further in the next chapter.

Rate of Growth of Home Demand. The rate of growth of home demand can be as important to competitive advantage as its absolute size. The rate of investment in an industry is as much or more a function of how rapidly the home market is growing as its size. Rapid domestic growth leads a nation's firms to adopt new technologies faster, with less fear that they will make existing investments redundant, and to build large, efficient facilities with the confidence that they will be utilized.[39] Conversely, in nations where the rate of growth of demand is more moderate, individual firms tend to expand only incrementally and are more resistant to embrace new technologies that make existing facilities and people redundant. Rapid home demand growth is especially important during periods of technological change, when firms need the conviction to invest in new products or new facilities.

A good case in point is the Italian appliance industry. The industry, less established in Italy right after World War II than it was in a number of other European countries, grew in the space of little more than a decade to be the European export leader. One of the reasons was the boom in appliance demand in Italy during the 1950s. Rapid growth led Italian producers to build uniquely large-scale, automated plants focused on individual types of appliances. Italian firms also began to supply the emerging private label segment throughout Europe, under the brand names of the newly powerful European chain stores. Other European appliance producers, with established facilities and less buoyant home market growth, tended to expand incrementally and therefore did not fundamentally alter the production methods employed. Combined with this was the fact that Italian firms produced low-cost, relatively compact appliances that fit the needs of the Italian market. This segment was growing and underserved by European competitors. Demand growth, like all aspects of demand quantity, is not an advantage unless demand composition is favorable.

Japan is another country where rapid home market growth stimulated aggressive investment in a number of industries. In steel, tires, lift trucks, and many other industries, Japan experienced rapid home market growth somewhat later than in the United States and leading European countries. Rapid growth spurred Japanese firms to invest aggressively in automated facilities of the latest vintage. Western producers, facing more mature home markets and stuck with older facilities, were unwilling to do so.

Early Home Demand. Provided it anticipates buyer needs in other nations, early local demand for a product or service in a nation helps local firms to move sooner than foreign rivals to become established in an industry.[40] They get the jump in building large-scale facilities and accumulating experience. The product varieties demanded early by local buyers are particularly important to competitive advantage because they are where a nation's firms cut their teeth. Competitive strategies are established with these segments in mind, and investments are often directed toward them. Once again, however, the composition of home demand is more important than its size. Only if home demand is anticipatory of international needs will early home demand contribute to advantage.

These considerations find an interesting application in analyzing the impact of defense spending in promoting American competitive advantage. The defense sector has been the first market in the United States for many advanced goods, and the uniquely large U.S. defense budget has been viewed as an advantage to American firms. It is indeed an advantage if defense demand mirrors civilian demand both in the United States and abroad, because firms develop assets and skills that can be transferred to meeting civilian needs. In the case of jet aircraft, defense demand for the first military jet transport was an important advantage to Boeing in becoming world leader in civilian transports—the 707 was essentially the same plane. The 747 was also originally a military aircraft design that lost out to the Lockheed C5A in the competition for a large military transport plane.

In many other industries, however, early defense demand has not necessarily been an advantage for U.S. firms. In computer-controlled machine tools, for example, defense needs were for product varieties with only modest applications in the civilian market. Japanese machine tool producers, without this distraction, concentrated on numerically controlled machine tools for general-purpose applications and became world leaders.

Whether defense demand is a strength or a weakness for U.S. firms depends on its composition—how accurately defense needs reflect or anticipate later civilian needs and how transferable skills are from defense to civilian applications. This will vary greatly from industry to industry, but it appears that the similarity between military and civilian needs has diminished.

Early Saturation. As significant as early home market penetration is early or abrupt saturation. Early penetration helps local firms become established. Early saturation forces them to continue innovating and upgrading. A saturated home market creates intense pressures to push down prices, introduce new features, improve product performance, and provide other incentives for buyers to replace old products with newer versions. Saturation escalates local rivalry, forcing cost cutting and a shakeout of the weakest firms. The result is often the emergence of fewer but stronger, more innovative local rivals.

Another frequent result of home market saturation is vigorous efforts by a nation's firms to penetrate foreign markets, in order to sustain growth and even to fill capacity. It was striking how many of the industries we studied began their first significant international activity after the home market saturated. This was particularly true in Japan and the United States, but there were examples in virtually every country. The abrupt end of the post–World War II reconstruction of Italy was an important impetus that propelled Italian construction firms to become successful international competitors, for example.[41]

Home market saturation is particularly beneficial if it is combined with buoyant growth in foreign markets. If foreign demand is surging while home demand is maturing, a nation's firms have strong incentives to sell abroad just at the time when foreign firms lack the capacity to meet booming demand or are complacent because of the absence of domestic rivalry. In many industries, such periods have been seminal ones in determining eventual leadership.

An extreme example is the rise to world prominence of U.S. engineering and construction firms in the years following World War II. The American industrial base and infrastructure were largely intact, while much of the rest of the world's were destroyed and needed rebuilding. With available capacity and skills gained in working on wartime projects, American firms were swept into the vacuum created by the foreign reconstruction boom and the absence of qualified foreign firms. That U.S. aid was partially funding the reconstruction did not hurt. Similarly, Japanese firms got their break in semiconductors when American firms could not meet demand in the economic upturn of the late 1970s. Combined with heavy investment in newer metal oxide (MOS) technology when American firms were still committed to bipolar technology, this catapulted the Japanese to industry leadership.

Another good example is consumer electronics. In consumer electronic products, saturation in the Japanese home market is rapid and product life cycles are extremely short because of homogeneity of tastes combined with the sophistication and status-consciousness of the buyers I described earlier. The result is that Japanese consumer electronics firms are scrambling to find the next product when foreign consumers are just beginning to buy the generation that is already passé in Japan. This rapid saturation is a potent advantage because home buyers are picky and seek light, compact, multifeatured products that suit Japanese living conditions. Here, rapid saturation pushes producers to innovate in ways that are valued by foreign buyers and which tend to be neglected by foreign rivals.

Like early penetration, early saturation is an advantage only if home demand composition directs a nation's firms to products and product features that are desired abroad.

Internationalization of Domestic Demand

The composition of home demand is at the root of national advantage, while the size and pattern of growth of home demand can amplify this advantage by affecting investment behavior, timing, and motivation. But there is a third way in which home demand conditions contribute, through mechanisms by which a nation's domestic demand internationalizes and *pulls* a nation's products and services abroad.

Mobile or Multinational Local Buyers. If the nation's buyers for a product or service are mobile or are multinational companies, an advantage is created for the nation's firms because the domestic buyers are also foreign buyers.

Mobile consumers, who travel extensively to other nations, provide a base of often loyal customers in foreign markets. More important in many ways, however, is that their existence highlights the *opportunity* of establishing an overseas presence to a nation's firms and may well provide the conviction to pursue such a presence by lowering the perceived risk. This effect is quite apparent in travel-related industries, where U.S. hotel, rent-a-car, and credit card firms have benefited. It is also significant in such other industries as fast food.

A similar set of arguments applies where home buyers are multinationals, with subsidiaries or operations in many other nations. Multinationals frequently prefer to deal with suppliers of products and services based in their home nation, particularly in the early years of operating abroad but often long after their international position is established. These preferences stem from ease of communication, a desire to reduce risk, and the efficiencies of employing consistent inputs everywhere. Buyers' preference for home-grown suppliers provides an early impetus for suppliers to move abroad and a base of foreign demand.

A good example is the earthmoving equipment industry, where U.S. firms such as Caterpillar were encouraged overseas by preeminent American construction firms, mining companies, and forest products producers. In turn, U.S. oil drilling, mining, and construction equipment pulled heavy engine manufacturers, such as Cummins, abroad. American auto parts suppliers followed U.S. auto companies to Canada, Europe, and elsewhere. More recently, Japanese auto parts suppliers are following the foreign operations of the Japanese car companies.

Influences on Foreign Needs. Another way in which domestic demand conditions can pull through foreign sales is when domestic needs and desires get transmitted to or inculcated in foreign buyers. One obvious way is when foreigners come to a nation for training. They are taught approaches and values reflecting local conditions, and have a tendency to carry them back home. A typical result is the desire to use the same goods and services they were trained on. A good example is the extensive training of foreign doctors in the United States, which has aided U.S. medical equipment firms who find a receptive audience when they seek to sell abroad.

The same general phenomenon occurs because of a demonstration effect, often present in the scientific community. Foreign scientists seek to emulate the practices of those nations' scientists that are perceived as the world leaders. The leaders' procedures and equipment are often reported in technical journals as well as disseminated by word of mouth. A good example of a product that benefited from such a process is microscopes, where German firms (notably Zeiss) prospered internationally in part because of an association with world-class German researchers. A similar demonstration effect may surround any world-class national industry: foreign competitors will have a tendency to emulate the machinery and other inputs that industry employs.

Domestic buyer needs are also transmitted abroad through exports that disseminate culture, such as movies and television programs. Also significant is emigration, which creates a base of foreign demand and a demonstration effect for certain types of products, and tourism, which exposes foreigners to national tastes and norms that may prove appealing. None of these is significant to competitive advantage, however, unless home demand is advanced and sophisticated.

Another means by which home demand is transmitted is via political alliances or historical ties. This embeds in foreign nations such things as the legal system, product or technical standards, and preferences in purchasing. Britain gained enormously through such links in the 1800s through the mid-1900s. Foreign aid and special political relationships among nations are having less dramatic but similar effects today. Nations such as Italy and Japan, for example, are adept at using foreign aid to increase demand for their firms' products and services. Too much "captive" foreign business can undermine competitive advantage, however, by reducing the pressure to improve and innovate.

The Interplay of Demand Conditions

It should be clear already that the various home demand conditions can reinforce each other and have their greatest significance at different stages of an industry's evolution. The television set industry (see insert) provides a good example. The most important attributes of home demand are those that provide initial and ongoing stimulus for investment and innovation as well as for competing over time in more and more sophisticated segments. Examples are especially demanding local buyers, needs that anticipate those of other nations, rapid growth, and early saturation. The resulting advantages are more decisive and enduring than one-time advantages from demand size and mix. Some aspects of home demand are important in initially establishing advantage, while others reinforce that advantage or help sustain it.

The effect of demand conditions on competitive advantage also depends on other parts of the "diamond." Without strong domestic rivalry, for example, rapid home market growth or a large home market may induce complacency rather than stimulate investment. Without the presence of appropriate supporting industries, firms may lack the ability to respond to demanding home buyers. The "diamond" is a system in which the role of any determinant cannot be viewed in isolation.

Demand Conditions in the Television Set Industry

Television sets provide a good example of the interplay of demand conditions that are working in tandem and are mutually reinforcing. Japanese home demand was primarily for small, compact, portable televisions because of lower per capita income and because Japanese homes are small and television sets are often put away after use. The American firms that had pioneered the industry were busy meeting home demand, which was primarily for large sets with fine furniture styling and large picture tubes. American firms spent relatively little effort designing small picture tubes and making sets compact. Japanese firms devoted most of their effort in these directions, content to license large set technology and purchase large tubes from the United States.

Japanese home demand for television sets, even though it took off somewhat later, was a much better mirror of world demand than was early American home demand because television sets became part of everyday life instead of something to put in the living room, and compact sets proved to be the global product. Also, as described earlier, Japanese buyers are extremely knowledgeable and demanding about consumer electronics, which led to intense efforts to improve quality, features, and price.

Although television set demand took off earlier in the United States than in Japan, the Japanese market reached saturation sooner. As American firms continued earning record profits, Japanese television set producers scrambled to deal with falling domestic demand. They reduced costs, introduced sets with new features, and moved aggressively to serve export markets. At the end of the 1980s, the Japanese firms were commanding world leaders, especially in differentiated segments.

RELATED AND SUPPORTING INDUSTRIES

The third broad determinant of national advantage in an industry is the presence in the nation of supplier industries or related industries that are internationally competitive.[42] Japanese machine tool producers drew on world-class suppliers of numerical control units, motors, and other components. Swedish strength in fabricated steel products (for example, ball bearings, cutting tools) has drawn on strength in specialty steels. Swiss firms are leaders in embroidered goods and also embroidery machines. Figure 3–2 illustrates how internationally competitive supplier industries underpin Italian success in footwear. Competitive advantage in some supplier industries confers potential advantages on a nation's firms in many other industries, because they produce inputs that are widely used and important to innovation or to internationalization. Semiconductors, software, and trading, for example, are industries that have important impacts on many others.

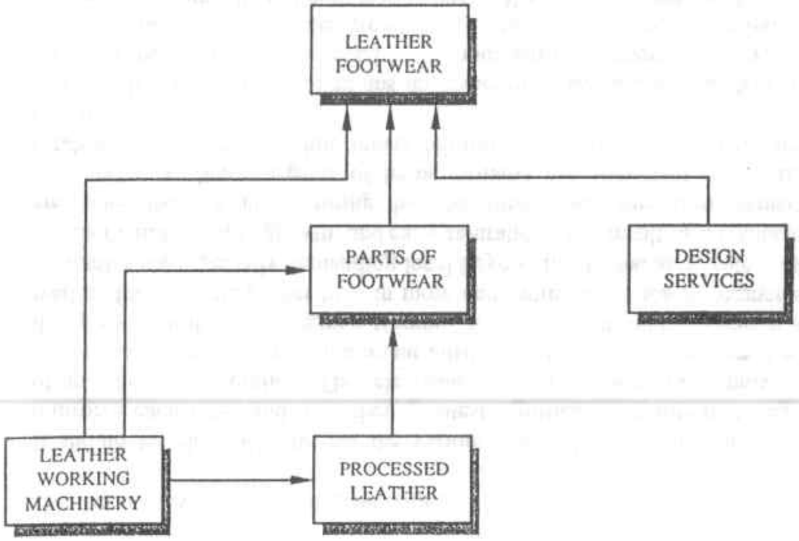


FIGURE 3–2 **Internationally Successful Italian Supplier Industries to Footwear**

The presence of competitive industries in a nation that are related is no less common or significant. The Swiss success in pharmaceuticals was closely connected to previous international success in the dye industry. Japanese leadership in facsimile owes much to the Japanese strength in copiers, while Japanese dominance in electronic musical keyboards grows out of success in acoustic instruments combined with a strong position in consumer electronics. Figure 3–3 illustrates that the Italian footwear industry is also linked to a wide variety of related industries that are competitive.

The mechanisms by which competitive advantage in supplier and related industries benefit other industries are similar. The direct effects on competitive advantage are described below. Those that work through other determinants will be discussed in Chapter 4.

COMPETITIVE ADVANTAGE IN SUPPLIER INDUSTRIES

The presence of internationally competitive supplier industries in a nation creates advantages in downstream industries in several ways. The first is via efficient, early, rapid, and sometimes preferential access to the most cost-effective inputs. Italian world leadership in gold and silver jewelry has been sustained, for example, in part because other Italian firms produce two-thirds of the world's jewelry-making machinery and are also world

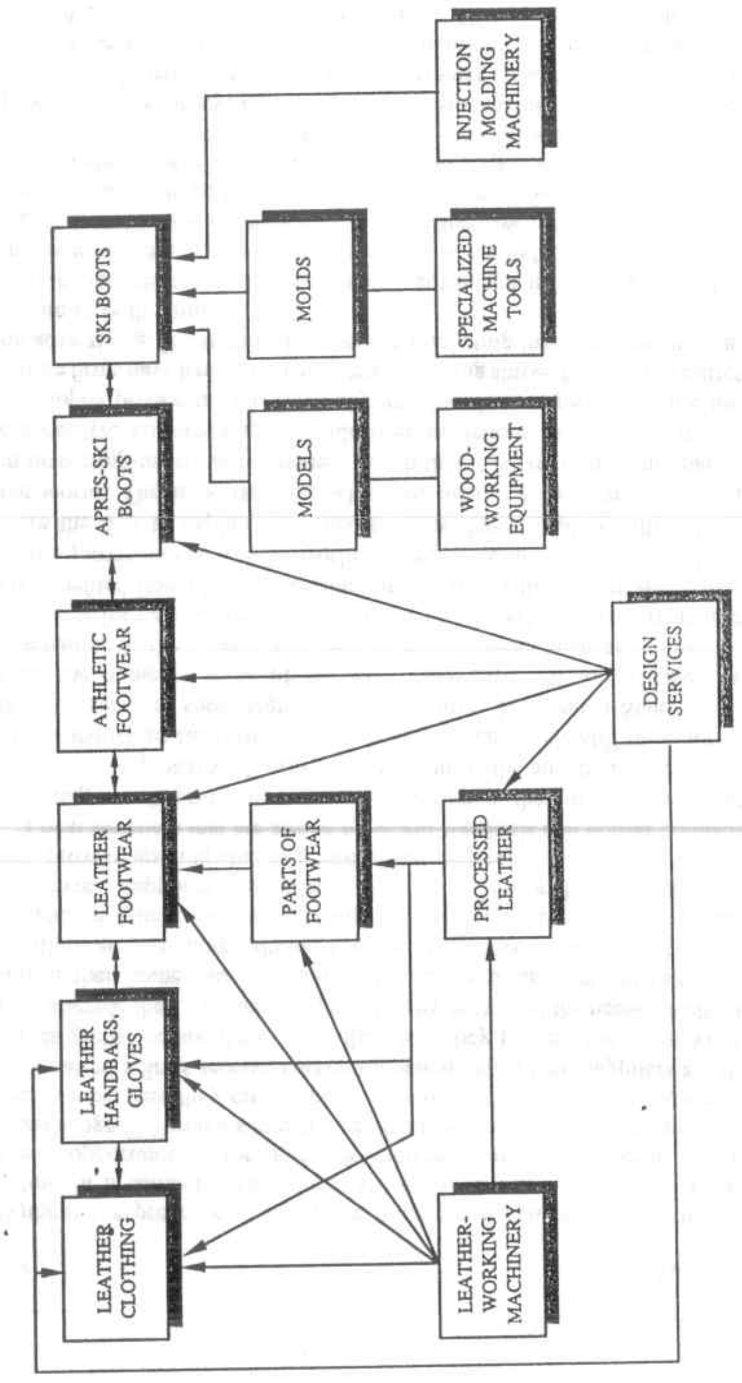


FIGURE 3–3 Internationally Successful Italian Industries Related to Footwear

leaders in equipment for recycling precious metals. The Italian jewelry industry is quick to obtain new equipment models. Italian equipment suppliers compete intensely to serve their home market, for reasons I described earlier. The result is attractive prices and responsive service.

Mere access or availability of machinery or inputs, however, is not the most significant benefit of having a home-based supplier industry that is internationally successful, even if it is early. In global competition, components, machinery, and other inputs are available on global markets, and availability is much less important than how effectively inputs are utilized.

More significant than access to machinery or other inputs is the advantage that home-based suppliers provide in terms of ongoing coordination. I described in the previous chapter how linkages between the value chains of firms and their suppliers are important to competitive advantage. Establishing such linkages is facilitated by having the essential activities and senior management of suppliers nearby. Foreign suppliers are rarely a complete substitute, even if they have local subsidiaries.

Perhaps the most important benefit of home-based suppliers, however, is in the *process of innovation and upgrading*. Competitive advantage emerges from close working relationships between world-class suppliers and the industry. Suppliers help firms perceive new methods and opportunities to apply new technology. Firms gain quick access to information, to new ideas and insights, and to supplier innovations. They have the opportunity to influence suppliers' technical efforts as well as serve as test sites for development work. The exchange of R&D and joint problem solving lead to faster and more efficient solutions. Suppliers also tend to be a conduit for transmitting information and innovations from firm to firm. Through this process, the pace of innovation within the entire national industry is accelerated. All these benefits are enhanced if suppliers are located in proximity to firms, shortening the communication lines.

Italy provides many examples of this sort of interchange. In the leather footwear industry (Figure 3–2), for example, producers interact regularly with leather manufacturers on new styles and manufacturing techniques. Footwear manufacturers learn about the new textures and colors of leather on the drawing board. Leather manufacturers, in turn, gain early insights into fashion trends which help them plan new products. As this example illustrates, however, gaining the benefits of home-based suppliers *does not happen automatically*. Both firms and their suppliers must work to do so, a theme of later chapters.

Having a competitive domestic supplier industry is far preferable to relying even on well-qualified foreign suppliers. The home market is highly visible to domestic suppliers, and success there is a matter of pride. Proximity of managerial and technical personnel, along with cultural similarity, tends to facilitate free and open information flow. Transaction costs are reduced.

Without the presence of a supplier's core research facilities in the home nation, it is unlikely that buyers will get information as early or have the same opportunities for joint development and other forms of deep interchange.[43] Foreign suppliers are also less desirable for the entire national industry because they rarely spawn new domestic entry (see Chapter 4).

A nation's firms receive maximum benefit when their suppliers are themselves global competitors. Only then will they possess the wherewithal to best upgrade their own advantages, thereby providing the needed technology flow to their home-based customers. Home-based suppliers with international positions are also more valuable sources of information and insights. Pressuring local suppliers not to serve foreign competitors is ultimately self-defeating. "Captive" suppliers, dependent solely on a firm or the national industry, will provide less impetus to improve and upgrade.

Local suppliers that are strong by world standards still bolster competitive advantage in downstream industries even when they are not in industries that compete globally. A good case in point is the advertising media. Most media industries (television, radio, and magazines) are still multidomestic, though there are some signs of globalization. The United States has long been the home of some of the most innovative and sophisticated media companies in the world, and new forms of media such as television and magazine formats have been pioneered in the United States. American marketers benefited from close and ongoing interaction with sophisticated American media providers (as well as world-leading advertising agencies), and often were the first to exploit new media forms that ultimately diffused around the world. The importance of advanced media as suppliers to companies in marketing-intensive industries is such that it is rare to find internationally competitive consumer goods industries in nations that do not have well-developed private media. Germany and Sweden, in particular, are nations whose firms have had to learn modern marketing abroad because of restrictions on advertising. International success in marketing-intensive consumer goods is rare in both nations.

A nation need not possess national advantage in all supplier industries in order to gain competitive advantage in an industry. Inputs without a significant effect on innovation or on the performance of an industry's products and processes can be readily sourced from abroad. So may other generalized technologies where the industry represents a narrow application area. In a variety of Swiss and German industries such as hearing aids and plastics processing machinery, for example, firms successfully established subsidiaries in the United States to tap into electronics or software expertise. Here, their in-depth knowledge of the user industry was more important than lack of expertise in supplier technologies. Compensating for the lack of a critical supplier industry in a nation is also feasible where the user industry

is already well-developed and represents a specialized use of the supplier industry's product.

Competitive Advantage in Related Industries

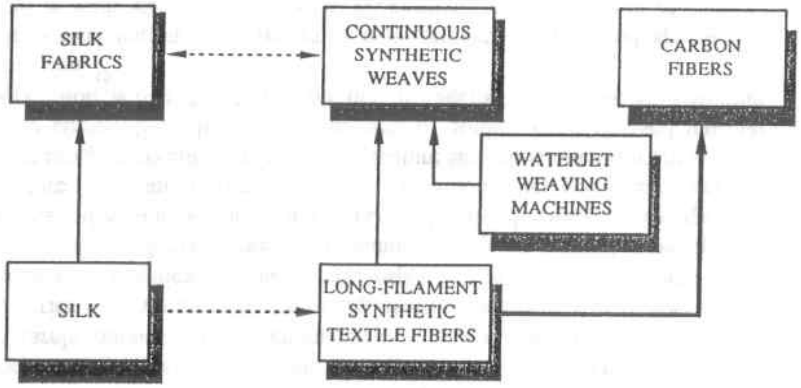
The presence in a nation of competitive industries that are related often leads to new competitive industries. Related industries are those in which firms can coordinate or share activities in the value chain when competing, or those which involve products that are complementary (such as computers and applications software). Sharing of activities can occur in technology development, manufacturing, distribution, marketing, or service. For example, copiers and facsimile machines employ many of the same technologies and components and can be distributed and serviced through the same channels.

Cases where nations are internationally competitive in related industries are pervasive. A few examples drawn from our case studies are shown in Table 3–1.

TABLE 3–1 **Internationally Competitive Related Industries**

Nation	*Industry*	*Related Industry*
Denmark	Dairy products, brewing	Industrial enzymes
Germany	Chemicals	Printing ink
Italy	Lighting	Furniture
Japan	Cameras	Copiers
Korea	VCRs	Videotape
Singapore	Port services	Ship repair
Sweden	Automobiles	Trucks
Switzerland	Pharmaceuticals	Flavorings
United Kingdom	Engines	Lubricants, antiknock preparations
United States	Electronic test and measuring equipment	Patient monitoring equipment

Figure 3–4 charts a group of related Japanese industries in more detail. Japan's strength in long-filament synthetic textile fibers reflects a long tradition of success in silk, as does a leading export position in silk-like continuous synthetic weaves, woven from long-filament synthetic fibers. Carbon fibers employ technology closely related to synthetic filament fibers and many of the same competitors participate in both. Also, while not overall leaders in textile machines, Japanese firms are leaders in water jet weaving machines, used to weave long-filament synthetic fibers into synthetic weaves. Such groups of linked competitive industries in a nation are common.


SILK FABRICS
CONTINUOUS SYNTHETIC WEAVES
CARBON FIBERS
WATERJET WEAVING MACHINES
SILK
LONG-FILAMENT SYNTHETIC TEXTILE FIBERS

NOTE: Broken lines refer to related industries
Solid lines represent supplier relationship

FIGURE 3–4 **Related Japanese Industries in Fibers and Fabrics**

The presence of an internationally successful related industry in a nation provides opportunities for information flow and technical interchange, much like the case with home-based suppliers. Proximity and cultural similarity make such interchange easier than is the case with foreign firms. The presence of a related industry also raises the likelihood that new opportunities in industry will be perceived. It also provides a source of new entrants who bring a new approach to competing (see Chapter 4).

Domestic companies in related industries often share activities and sometimes forge formal alliances.[44] In Switzerland, for example, the herbal candy firm Ricola accelerated its international expansion through employing the foreign distribution channels of the Swiss chocolate company, Tobler/Jacobs. In Sweden, Atlas Copco (mining machinery) and Sandvik (rock drills) have a history of formal and informal contacts including a formal marketing alliance. The presence of successful related industries in a nation may also hasten the development of supplier industries that serve both.

International success in one industry can also pull through demand for complementary products or services. The sale of American computers abroad, for example, has led to overseas demand for American computer peripherals, American software, and American database services. Service industries pull through sales of linked manufactured goods from that nation and vice versa (see Chapter 6). Complementary products or services provided by firms based in the same nation may be, or may be perceived to be, more cost effective. Companies contribute to this perception by actively recommending other firms from their home nation, because they are used to dealing with them and have confidence that their products or services will not undermine the performance of their own. Close working relationships between firms producing complementary goods may also lead to product performance that is actually better.

The strength of this pull-through effect varies by industry, in rough proportion to the extent of technical interdependencies between the products involved. Pull through tends to be strongest early in the life cycle of the industries involved. However, the link between complementary goods can create first mover advantages that persist long after the link fades. Britain, for example, gained strong international positions in many services connected with trading because it was an early, powerful trading nation. The foreign infrastructure and brand franchises created through this process have proved to be quite a durable competitive advantage for some British service providers.

National success in an industry is particularly likely if the nation has competitive advantage in a number of related industries. The most significant are those important to innovation in the industry or those that provide the opportunity to share critical activities. Prior to the emergence of the facsimile industry, for example, Japan had leading positions in copiers, other office machines, photographic equipment, and some strong competitors in telecommunications equipment, covering all essential technologies important to facsimile.

The benefits of both home-based suppliers and related industries, however, depend on the rest of the "diamond." Without access to advanced factors, home demand conditions that signal appropriate directions of product change, or active rivalry, for example, proximity to world-class domestic suppliers may provide few advantages. In the television set industry, for example, American competitors were concentrating on the home market and on segments less demanded elsewhere. They lacked the pressure to shift to solid state technology and to automate manufacturing. Proximity to then-preeminent U.S. semiconductor companies did not compensate.

FIRM STRATEGY, STRUCTURE, AND RIVALRY

The fourth broad determinant of national competitive advantage in an industry is the context in which firms are created, organized and managed as well as the nature of domestic rivalry. The goals, strategies, and ways of organizing firms in industries vary widely among nations. National advantage results from a good match between these choices and the sources of competitive advantage in a particular industry. The pattern of rivalry at home also has a profound role to play in the process of innovation and the ultimate prospects for international success.

STRATEGY AND STRUCTURE OF DOMESTIC FIRMS

The way in which firms are managed and choose to compete is affected by national circumstances. While no nation exhibits uniformity across all firms, the national context creates tendencies that are strong enough to be readily noticeable by any observer. In Italy, many successful international competitors are relatively small- or medium-sized firms that are privately owned and run like extended families. In Germany, the top management of many companies consists of individuals with technical backgrounds, and companies are hierarchical in organization and management practices. Efforts to explain why one nation's managerial system is superior have a long tradition; attention was once focused on American management, while in the 1980s it has been on Japan.

No one managerial system is universally appropriate. Nations will tend to succeed in industries where the management practices and modes of organization favored by the national environment are well suited to the industries' sources of competitive advantage. Italian firms, for example, are world leaders in a range of fragmented industries (such as lighting, furniture, footwear, woolen fabrics, and packaging machines) in which economies of scale are either modest or can be overcome through cooperation among loosely affiliated companies. Italian companies most often compete by employing focus strategies, avoiding standardized products and operating in small niches with their own particular style or customized product variety. Often dominated by a single individual, these firms rapidly develop new products and can adapt to market changes with breathtaking flexibility.

In Germany, in contrast, the engineering and technical background of many senior executives produces a strong inclination toward methodical product and process improvement. Intangible bases of competitive advantage are rarely pursued. These characteristics lead to the greatest success in industries with a high technical or engineering content (for example, optics, chemicals, complicated machinery), especially where intricate and complex products demand precision manufacturing, a careful development process, after-sale service, and hence a highly disciplined management structure. German success is much rarer in consumer goods and services where image marketing and rapid new feature and model turnover are important to competition. In Japan, a number of studies have stressed unusual cooperation across functions and the management of complex assembly operations.[45]

Important national differences in management practices and approaches occur in such areas as the training, background, and orientation of leaders, group versus hierarchical style, the strength of individual initiative, the

tools for decision making, the nature of the relationships with customers, the ability to coordinate across functions, the attitude toward international activities, and the relationship between labor and management.[46] These differences in managerial approaches and organizational skills create advantages and disadvantages in competing in different types of industries.[47] Labor management relationships are particularly significant in many industries because they are so central to the ability of firms to improve and innovate.

Many aspects of a nation, too numerous to generalize, influence the ways in which firms are organized and managed. Some of the most important aspects are attitudes toward authority, norms of interpersonal interaction, attitudes of workers toward management and vice versa, social norms of individualistic or group behavior, and professional standards. These in turn grow out of the educational system, social and religious history, family structures, and many other often intangible but unique national conditions. For example, Italy's small-sized firms and family ownership reflect, among other things, a high degree of individualism and a suspicion of authority unless coming from the family or extended family. Italy is a country in which family ties are strong, and even today people prefer to remain near their birthplace. Situations where family members all work in the same firm are very common, and rather than enlarging the existing firm beyond a certain level, new firms are created for sons and daughters.[48]

The orientation of firms toward competing globally (Chapter 2) takes on unusual significance in international competition and deserves more extended treatment here. The willingness and ability of firms to compete globally is partly a function of other determinants such as pressure from domestic market saturation or local rivalry and the pull through of international demand. However, managerial attitudes play an important role as well. Several aspects of the national environment affect the international outlook of firms, or their ease and willingness to operate globally. One is attitudes toward travel. Travel has a long tradition and is a way of life in countries such as Sweden and Switzerland. In several of the Swiss industries I studied, for example, founders of important companies had been trained or had lived for a long time outside Switzerland before returning home. Inevitably, one of the founder's first acts was to establish a foreign subsidiary in the country where he or she had lived. Both Swedish and Swiss firms do well competing in industries requiring far-flung global strategies and involving sensitive relations with local governments and buyers.

Language skills and attitudes toward learning new languages are also significant in influencing whether firms adopt a global outlook. However, the Japanese case illustrates that other determinants are more important causal factors. Japanese, who have difficulty learning Western languages and whose culture is not outwardly oriented, have mastered foreign languages because they have expended great effort to do so. Driven by intense rivalry and domestic market saturation, they found exporting a necessity.

Government policy frequently plays a role in influencing the ease or difficulty of internationalization of domestic firms and, hence, the type of industries in which they succeed. A straightforward example is in the area of foreign exchange controls that limit foreign direct investment. Because of a history of such restrictions, for example, Italian firms are rarely successful in industries in which foreign direct investment is essential to competing. A nation's political stance also plays a material role in promoting globalization in certain industries. Swiss and Swedish neutrality has been an important advantage in establishing international networks, particularly in politically sensitive industries. Other policies that bear on a local firm's ability to operate abroad include controls on the movement of domestic or foreign managerial personnel.

GOALS

Sharp differences exist within and among nations in the goals that firms seek to achieve as well as the motivations of their employees and managers.[49] Nations will succeed in industries where these goals and motivations are aligned with the sources of competitive advantage. In many industries, one component of achieving and sustaining advantage is sustained investment. More broadly, nations succeed in industries where there is unusual commitment and effort.

Company Goals. Company goals are most strongly determined by ownership structure, the motivation of owners and holders of debt, the nature of the corporate governance, and the incentive processes that shape the motivation of senior managers. The goals of publicly held corporations[50] reflect the characteristics of the nation's public capital markets. Capital markets vary a great deal across nations, along such dimensions as the identity of shareholders, the local tax regime, and the prevailing standards for rate of return. In addition, the role of shareholders and debtholders in corporate governance also varies. In Germany and Switzerland, for example, most shares are held by institutions for extended periods and are rarely traded. Banks are important holders of equity shares and play a prominent role on boards of directors, guiding corporate investments. Long-term capital gains have been exempt from taxation, reinforcing a perspective to hold shares for sustained periods. Management pays attention to the board, but day-to-day stock price movements are not viewed as particularly important. Because of local accounting rules, companies can establish substantial reserves to

shelter income and provide a cushion in hard times. Norms for reported profitability are modest. Companies do well in mature industries requiring ongoing investment in research and new facilities, even where industry average returns are moderate.

The United States is at the other extreme. Most shares are held by institutional investors, but institutions are measured on quarterly and annual share price appreciation. Lacking full information about companies' long-term prospects and seeking stocks which will soon appreciate, investment choices stress quarterly earnings growth. Institutions trade frequently in order to realize capital appreciation, and account for most trading in larger company stocks. Long-term capital gains of investors are taxed at the same rate as ordinary income, shortening the time horizon of investment. Many institutions, because they are managing pension assets, take no account of taxes in investment choices. When coupled with low transaction costs in the efficient U.S. market, more rapid trading is encouraged.

Shareholders have little direct influence in the management of American companies because boards play little role in corporate governance. In practice, the only effective way to remove underperforming management or affect corporate direction is through takeover. Management responds to stock price movements because of the takeover threat and the prevalence of stock options. In the United States, executive compensation is strongly influenced by overall company size and also involves a high bonus component compared to other nations, usually based on the current year's profits. Since the average tenure in management positions is short, foregoing this year's bonus for a higher one next year is unusual. The lack of effective shareholder governance means that there is little to counteract such behavior. For these reasons and others, the rate of return standards for evaluating investments are higher in America than in any other advanced nation we studied.

Coexisting in the United States with this capital market and governance structure for mature companies is a well-functioning public and quasi-public market for risk capital. This market is much less developed in most other nations. Start-ups and emerging growth companies can be readily funded, particularly if they are in glamorous industries or are viewed as "high tech." The rewards to founders are often substantial. In such industries, companies can and do show losses for five years or more. The biotechnology industry is a good example: few firms have ever made a profit in any year, yet billions of dollars of public equity have flowed into the industry over the last decade.

Britain's situation is closer to America's, while Sweden and Japan are closer to Germany and Switzerland. In both Sweden and Japan, large industrial groups (which include banks) play significant roles as long-term investors. In Germany, large banks themselves are cast in this role. In Italy, public capital markets are of less importance and many internationally successful companies are privately owned. In Korea, the public capital markets have been inefficient and poorly developed. Government policy is the decisive factor in capital allocation, based on considerations other than short-term rate of return.

While I have concentrated on the goals of investors in public companies and their influence on management, private companies play an important role in many national economies. The goals of privately owned firms are more complex. Often pride and the desire to provide continuity to employees is important. Private owners frequently have a very long time horizon, are intensely committed to the industry, and operate with different profitability thresholds. In our research, it was striking how many internationally successful companies were either privately held, effectively private because of a controlling or *de facto* controlling equity block, or owned by a nonprofit foundation (for example Zeiss, Novo Industri, and Carlsberg). The sustained investment of such companies and their close identification with and commitment to their industry were palpable.

The attitudes of debt holders also influence company goals. An important difference among nations is the extent to which debt holders also hold equity. In nations such as Japan, Germany, and Switzerland, regulations allow banks to hold corporate equity. Major lenders hold significant equity stakes and play an important role in corporate governance. By holding both, banks are motivated to be concerned with long-term company health rather than short-term cash flow and interest coverage.

Ownership structures, capital market conditions, and the nature of corporate governance in a nation have two broad influences on national advantage. The first grows out of the fact that industries have different appetites for funds, different risk profiles, different investment time horizons, and different average sustained rates of return. National capital markets will also set different goals for different types of industries. Nations will succeed in industries where the goals of owners and managers match the needs of the industry. A given institutional structure can benefit competitive advantage in some industries and impede it in others.

German and Swiss circumstances favor industries requiring modest initial risk capital but a need for heavy and sustained investment and reinvestment. American conditions favor entry into new industries requiring risk capital and competing in industries where strong incentives for annual profitability are consistent with competitive advantage (for example, in many services) because of the nature of their investment needs. The United States does well in relatively new industries (such as computers, software, and new forms of services) or ones in which equity funding of many new companies feeds active domestic rivalry (such as specialty electronics and consumer packaged goods). In more mature and less glamorous industries, however, capital market pressures and the governance process will be prone to lead to harvesting of competitive positions and an inadequate level of investment to sustain improvement and innovation. Companies in mature industries are motivated instead to seek mergers, unrelated diversification, and other actions that can quickly affect size, financial results, and investor perceptions.[51]

Second, the influence of the capital markets varies with the need for funds. In industries where private ownership is feasible, for example, a nation can succeed despite public capital markets that set counterproductive goals. Other parts of the "diamond" govern in such cases.

Goals of Individuals. The motivations of the individuals who manage and work in firms can enhance or detract from success in particular industries. The central concern is whether both are motivated to develop their skills as well as expend the effort necessary for creating and sustaining competitive advantage.

One important determinant of individual behavior and effort is the reward systems under which employees operate. An aspect of this is social values which influence attitudes toward work and the extent to which individuals are motivated by financial gain, which vary a great deal across nations. Also significant is the nation's tax structure. In Sweden, marginal tax rates are extremely high. People do not work primarily to enhance income but to contribute to the company and enhance their status. This facilitates coordination but slows decision making and limits risk taking, skewing success toward certain types of industries. Also important are pay and promotional practices. Bonus compensation based on individual performance and rapid promotion of the most outstanding employees, both typical in America, reinforce competitive advantage in some types of industries but detract from it in others, especially those requiring long accumulation of skills and complex coordination.

The attitude toward wealth also varies across nations. It is a big motivator in the United States, while looked on with some suspicion in Sweden. Swedes are less motivated than Americans to seek a fortune on a new start-up. Sweden is rarely successful in industries where this behavior is important to competitive advantage.

Another important dimension is the relationship between the manager or employee and the company. Creating and especially sustaining competitive advantage in many industries requires ongoing investments to upgrade skills, better understand the industry, and exchange ideas across functions. In industries where these attitudes are present, often because of a norm of virtually permanent employment, nations are successful. In the absence of such a relationship, national success will gravitate toward industries where competitive advantage is more a function of the brilliance or performance of a small group of individuals, such as professional and financial services, movies and other entertainment products, and specialty products based on advanced technology like software and specialized integrated circuits.

Individuals' attitudes toward skill development and toward company activities also stem from professional or technical training and pride. In Germany, employees (including managers) have often invested their entire careers training in a field or profession. The possibility that a firm cannot match its rivals' technical achievements is unthinkable, and this promotes relentless advance in industries amenable to incremental technical improvement. Another influence on individuals' goals in some nations is geographic preference. The desire to live in a particular area is the strongest in Italy of any of the nations we studied. Staying in an area often means working in the local industry, and finding a way to sustain it is tantamount to defending the home.

Attitude toward risk taking is a final important aspect of personal goals that influences the ability to achieve success in particular industries. I have discussed how "outsiders" often are prominent in innovation because of their willingness to take risk. Attitudes toward wealth affect risk taking, but so do other social and historical factors. In some nations, such as Germany, Switzerland, and Singapore, failure is viewed as personally catastrophic. In other nations, a failure or two are acceptable. The types of industries entered and the nature of the strategies chosen reflect these differences.

Also quite significant to risk taking is immigration, the ultimate source of outsiders. Nations such as America, Britain, and Switzerland, which have a history of immigration, have seen an unusual proportion of new firms emerge from newcomers.

The Influence of National Prestige/Priority on Goals. The quality of human resources attracted to particular industries and the motivation of individuals and even shareholders are affected by prestige or national priority. Unusual effort is often the result of such prestige or a sense of broader mission. Where an industry becomes a notable occupation or takes on national importance, competitive advantage often results.

Outstanding talent is a scarce resource in any nation, though the size of the pool may vary. In no small part, a nation's success depends on the types of education this talent chooses to obtain and where it chooses to work. Training the most promising young people in science and engineering is unusually beneficial to an economy because it provides the greatest spur to innovation. When an industry takes on the status of a national priority and/or a prestigious place to work, talented people flow into it and demonstrate unusual commitment and effort.

In the United States, for example, responding to Sputnik became an important stimulus to the aerospace sector. Outstanding people were attracted, and firms viewed their work as more than just business. Another good

example is the German chemical sector. The sector has long been prestigious in Germany, based on early groundbreaking chemistry research. Prior to World War II, the drive for self-sufficiency in materials elevated the industry to a vital national priority. Remarkable accomplishments took place in a short span of time. In Japan, the steel and consumer electronics industries were the most prestigious in the period just after World War II.

Sometimes it is difficult to distinguish between cause and effect. The attainment of international success can make an industry prestigious. Prestige then becomes a powerful reinforcing mechanism for sustaining advantage in an industry, even if it was not decisive in creating it initially.

National priority can be attached not only to industries but to particular issues that affect many industries. This can have the same supercharging effect on motivation. In Japan, national campaigns to improve product quality and reduce energy consumption had strong impacts on a number of industries. Japanese firms moved early and aggressively to confront these problems with techniques that helped them succeed internationally.

Industries become celebrated in a nation for reasons that can be deeply rooted in history, geographic location, social structure, and many other things. If prestige and national priority favor an industry, the ripple effect on competitive advantage can be enormous. However, the reverse is true as well. If a nation's priorities shift away from success in an industry or toward an idiosyncratic conception of economic progress, competitive advantage can be systematically undermined. Working in the manufacturing industry has long been seen as low in status in Britain where the higher callings were the church, the civil service, the military, and academia. Many British manufacturing industries suffered from a lack of talented people and a lack of mission.

The role of national prestige in stimulating national competitive advantage can be extended to make a broader point: nations tend to be competitive in activities that are admired or depended upon; that is, where the heroes come from. In Italy, it is fashion and furnishings, among others. In Switzerland, it is banking and pharmaceuticals. In the United States, it is finance and anything to do with entertainment, including movies, popular music, professional sports, and related fields. In Israel, the highest callings have been defense-related endeavors and agriculture. National passions not only affect demand conditions, as I have discussed, but also how firms compete. Competitive advantage often results because celebrated professions or industries attract the most talented people as well as a steady stream of new entrants.

The Importance of Sustained Commitment. The goals of firms and individuals are reflected in the nature of the commitment of capital and human resources to an industry, to a firm, and, for employees, to a profession.

The economist's ideal is freely mobile resources, which move quickly and fluidly from one industry to another based on what is their most productive use. This view is too simple, and our research suggests that easily movable resources are far from ideal for success in international competition.

The flaw in traditional thinking about resource mobility is that it assumes that the productivity of resource utilization in an industry is given. Under these circumstances, it is sensible for resources to flow to industries where the productivity is higher. In reality, however, innovation can often boost the productivity of the resources employed in an industry much more than the gains from reallocating them. At the same time, the knowledge and expertise built up in the industry are preserved, and the competitive advantage of firms is upgraded and made more sustainable. Innovation, though, requires sustained investment in terms of both capital and human resources.

Those national industries we studied in which employees and shareholders had the most sustained commitment to the firm and the industry were often those with competitive advantage, provided other determinants were favorable. Preserving advantage may well require reinvesting all available profits in a major restructuring despite low current returns and in the face of substantial risk. Innovations are frequently most necessary at times when current profitability is down. The alternative, giving up, must be unthinkable if improvement and innovation are to take place. In contrast, nations in which resources were rapidly redeployed from one industry to another whenever conditions became difficult were rarely internationally successful in that industry.

A good case in point is the history of Italian firms in woolen cloth. As firms from other nations fled this industry in the face of competition from newly industrializing countries, Italian family firms reinvested everything to upgrade technology and try to preserve position. A long tradition in the industry, family ownership, and commitment to the local community were some of the reasons.

Not all such efforts succeed, and committed firms fail. Technological skills or appropriate human resources may be lacking. While commitment does not ensure success, however, the lack of it makes success highly unlikely.

Company diversification patterns are an important indication of commitment to industries as well as of how resources are redeployed. Focus on a single business, or tightly related diversification, are both signs of commitment as well as causes of it. Related diversifiers are also able in many instances to redeploy resources within the firm, a reflection of commitment to employees. Unrelated diversification, conversely, had a strong negative correlation with national competitive advantage in the industries we studied. Corporate parents harvested subsidiaries instead of investing to preserve their competitive advantage.[52]

Of course, some mobility of resources is a *sine qua non* of an upgrading economy, so that resources do not stay locked into hopeless situations indefinitely. Yet sustaining competitive advantage requires that resources flow only after a fight. The ideal is adjustment, not abandonment, in which committed resources are recombined or reconfigured to boost productivity instead of being frozen in their current modes of deployment by management lethargy or restrictive union agreements.

DOMESTIC RIVALRY

Among the strongest empirical findings from our research is the association between vigorous domestic rivalry and the creation and persistence of competitive advantage in an industry. It is often argued that domestic competition is wasteful, because it leads to duplication of effort and prevents firms from gaining economies of scale. The right solution is seen as nurturing one or two firms who become ''national champions,'' with the scale and strength to compete against foreign rivals or, alternatively, to promote interfirm cooperation. Some also take the related view that domestic rivalry is unimportant in global industries.[53]

A look at the successful industries in the ten nations we studied casts grave doubts on this viewpoint. Nations with leading world positions often have a number of strong local rivals, even in small countries such as Switzerland and Sweden.[54] This is true not only in fragmented industries but also industries with substantial economies of scale. The Swiss in pharmaceuticals (Hoffmann-LaRoche, Ciba-Geigy, Sandoz), Sweden in both cars and trucks (Saab-Scania, Volvo), and Germany in chemicals (BASF, Hoechst, Bayer, and numerous others) and the United States in computers and software are illustrative. Nowhere is the extent of domestic rivalry greater than in Japan, as Table 3–2 illustrates.[55]

These examples belie the simple notion that world leadership grows out of one or two firms who reap economies of scale in the home market. In global competition, successful firms compete vigorously at home and pressure each other to improve and innovate. Additional scale is obtained by selling worldwide. The scale of the entire national industry is as important as that of individual firms.

We found, in contrast, few ''national champions,'' or firms with virtually unrivaled domestic positions, that were internationally competitive. Instead, most were uncompetitive though often heavily subsidized and protected.[56] In many of the prominent industries in which there is only one national rival, such as in aerospace and telecommunications, government has played a major role in distorting competition.

Domestic rivalry becomes superior to rivalry with foreign competitors

TABLE 3–2 Estimated Number of Japanese Rivals in Selected Industries, 1987

Air conditioners	13	Motorcycles	4
Audio equipment	25	Musical instruments	4
Automobiles	9	Personal computers	16
Cameras	15	Semiconductors	34
Car audio	12	Sewing machines	20
Carbon fibers	7	Shipbuilding	33**
Construction equipment	15*	Steel	5***
Copiers	14	Synthetic fibers	8
Facsimile machines	10	Television sets	15
Lift trucks	8	Truck and bus tires	5
Machine tools	112	Trucks	11
Mainframe computers	6	Typewriters	14
Microwave equipment	5	Videocassette recorders	10

SOURCES: Field interviews; *Nippon Kōgyō Shinbun, Nippon Kōgyō Nenkan*, 1987; Yano Research, *Market Share Jiten*, 1987; researchers' estimates.

* The number of firms varied by product area. The smallest number, ten, produced bulldozers. Fifteen firms produced shovel trucks, truck cranes, and asphalt paving equipment. There were twenty companies in hydraulic excavators, a product area where Japan is particularly strong.

** Six firms had annual production exports in excess of 10,000 tons.

*** Integrated companies.

when improvement and innovation, rather than static efficiency, are recognized as the essential ingredients for competitive advantage in an industry. Rivalry among a group of domestic competitors is different from and often takes forms far more beneficial to the nation than rivalry with foreign firms. In a closed economy, monopoly is profitable. In global competition, monopolies or cartels will lose to firms from more competitive environments.

Domestic rivalry, like any rivalry, creates pressure on firms to improve and innovate. Local rivals push each other to lower costs, improve quality and service, and create new products and processes. While firms may not preserve advantages for long periods, active pressure from rivals stimulates innovation as much from fear of falling behind as the inducement of getting ahead.[57]

Domestic rivalry need not be restricted to price; in fact, rivalry in other forms such as technology may well lead to more sustainable national advantage. In Germany, for example, price competition is not typical, but active rivalry on product performance, features, and service have sustained strong competitive advantages in many German industries.

Rivalry among firms with the same home base is particularly beneficial for a variety of reasons. First, strong domestic competitors create particularly visible pressures on each other to improve. One domestic rival's success

signals or proves to others that advancement is possible. It also often attracts new rivals to the industry.

Rivalry among domestic firms often goes beyond the purely economic and can become emotional and even personal. Active feuds between domestic rivals are common, and often associated with an internationally successful national industry. Local competitors received special attention in most of the industries we studied. Pride drives managers and workers to be highly sensitive to other companies in the nation, and the national press and investment analysts constantly compare one domestic competitor with the others. Domestic rivals fight not only for market share but for people, technical breakthroughs, and, more generally, "bragging rights." Foreign rivals, in contrast, tend to be viewed more analytically. Their role in signaling or prodding domestic firms is less effective, because their success is more distant and is often attributed to "unfair" advantages. With domestic rivals, there are no excuses.

Vigorous local competition not only sharpens advantages at home but pressures domestic firms to sell abroad in order to grow. Particularly when there are economies of scale, local competitors force each other to look outward in the pursuit of greater efficiency and higher profitability. In pencils, for example, the number two German competitor, Staedtler, concentrated very early on foreign markets because the industry leader, Faber-Castell, had a strong hold on the domestic market. Faber-Castell was, in turn, motivated by Staedtler's success to expand internationally as well. With little domestic rivalry, firms are more content to rely on the home market.

Toughened by domestic rivalry, the stronger domestic firms are equipped to succeed abroad. It is rare that a company can meet tough foreign rivals when it has faced no significant competition at home. If Digital Equipment can hold its own against IBM, Data General, Prime, and Hewlett-Packard, dealing with Siemens, ICL, or Machines Bull does not seem so daunting. Though some local rivals may go bankrupt and some mergers and consolidation may take place, the process of domestic rivalry produces stronger survivors.

Domestic rivalry not only creates pressures to innovate but to innovate in ways that *upgrade* the competitive advantages of a nation's firms. The presence of domestic rivals nullifies the types of advantage that come simply from being in the nation, such as factor costs, access to or preference in the home market, a local supplier base, and costs of importing that must be borne by foreign firms. If there are a number of Korean competitors in an industry, for example, none gets an advantage simply because of low labor costs or low-cost debt financing. This forces a nation's firms to seek *higher-order* and ultimately more sustainable sources of competitive advantage. Firms must find proprietary technologies, reap economies of scale, create their own international marketing networks, or exploit national advantages more effectively than the competitor down the street. Intense domestic rivalry helps break the attitude of dependence on basic factor advantages because local rivals have them as well. Without local rivals, a firm in a nation with factor advantages tends to rely on them and, worse yet, to deploy factors less efficiently.

The process of domestic rivalry also creates advantages for the entire national industry that are external to any particular firm. A group of domestic rivals tries alternative approaches to strategy and creates a range of products and services that cover many segments. This enhances innovation, and a breadth of products and approaches builds defenses against foreign penetration. The national industry's advantage is made more sustainable by removing some avenues for entry by foreign competitors. Good ideas are imitated and improved upon by local competitors, raising the overall rate of industry innovation. The stock of knowledge and skill in the national industry accumulates as firms imitate each other and as personnel move among firms. While a particular firm cannot keep all the knowledge and skills to itself, the whole national industry benefits through faster innovation. Ideas diffuse faster within the nation than across nations, because it is difficult for firms from other countries to tap into such a process.[58] Though individual firms cannot keep innovations proprietary for long, the entire national industry progresses faster than foreign rivals, and this supports profitability for many of the nation's firms.

Geographic concentration of rivals in a single city or region within a nation both reflects and magnifies these benefits. It is strikingly common around the world. Many of the Italian jewelry firms, for example, are located around two towns, Arezzo and Valenza Po, whose streets are lined with hundreds of companies. Similar concentrations of firms in successful industries are numerous, for example, Solingen, West Germany and Seki, Japan (cutlery); Basel, Switzerland (pharmaceuticals); Hamamatsu, Japan (motorcycles, musical instruments); Route 128 in Boston (minicomputers); and Madison Avenue, New York (advertising). In such an environment, popular luncheon spots are patronized by executives from several companies, who eye each other and trade the latest gossip. Information flows with enormous speed. Though any one firm must move fast to sustain its advantage, the whole national industry is dynamic and sustains, or even widens, its advantage over foreign rivals who lack the same structure.

Domestic rivalry not only creates advantages but helps to avoid some disadvantages. With a group of domestic rivals following various competitive strategies, there is a check against forms of government intervention that stifle innovations or blunt competition. When there are only one or two domestic rivals in a nation, in contrast, pressures are created for all sorts of ''assistance'' that undermines dynamism, such as subsidies, guaranteed

home demand, or favoritism of a local firm. None of this ''help'' is conducive to innovation and ultimately to competitive advantage (see Chapter 12).

Competing domestic rivals keep each other honest in obtaining government support. Government contracts do not become a guaranteed market for one company. Differences in international strategy work against protection. At the same time, the presence of rivals channels government support into more constructive forms that will benefit the entire industry, such as assistance in opening foreign markets and investments in specialized factor creation.

The phenomenon I have described is not confined to business competition. In the arts, in science, and even in sporting competition, there are many examples where one nation achieved disproportionate international success for a period of time, often involving a group of artists, scientists, or athletes who were working in the same city. In tennis, for example, Sweden has achieved unusual success in the 1980s, as Australia did in the 1960s. A group of strong young players pushes and challenges each other. One player's success attracts and encourages new aspirants. One player's entry into international competition gives others the courage to try.

A group of capable domestic rivals, then, creates a fertile environment for creating and sustaining competitive advantage that is difficult to replicate through competition with foreign rivals. The role of selective factor disadvantages, sophisticated buyers, and world-class suppliers in stimulating improvement and innovation is accentuated by the active domestic rivalry. The benefits of domestic rivalry are greater still when account is taken of the ways in which a group of domestic rivals can favorably affect the availability of home-based suppliers, the pool of skilled human resources, and other parts of the ''diamond'' (see Chapter 4).

Nowhere is the role of domestic rivalry more evident than in Japan, where it is all-out warfare in which many companies fail to achieve profitability. With goals that stress market share, Japanese companies engage in a continuing struggle to outdo each other. Shares fluctuate markedly. The process is prominently covered in the business press. Elaborate rankings measure which companies are most popular with university graduates. The rate of new product and process development is breathtaking.

The number of domestic competitors required for effective rivalry rests on the underlying scale economies in the industry. The need for numerous competitors in all types of industries is not implied. However, the need for static economies of scale is tempered by the importance for competitive advantage of the rate of innovation. Dominant firms are not the innovators in many industries, as I discussed in the previous chapter.[59] They experience inertia and ties to old ways of competing. Many of the technologies of the 1980s and 1990s are also less scale-sensitive than earlier generations.

A completely open home market along with extremely global strategies can partially substitute for the lack of domestic rivals in a smaller nation.[60]

The number of rivals may also fall gradually as an industry matures; more local rivals tend to be optimal in the earlier stages of an industry's development. But strong domestic rivalry is a national asset whose value is hard to overstate.[61]

A number of domestic competitors is not itself sufficient to determine success. If there is no effective rivalry among the competitors, the advantages of domestic competition are nullified.[62] Moreover, the nation must have other advantages in the "diamond" or competitive success is unlikely. In insulin, for example, there have been two British insulin competitors, Wellcome and Boots, but insulin represents a small fraction of their business and neither is committed to the industry. British demand conditions also tend to be less favorable because of tight cost controls on health care spending and the fact that most purchases are funneled through only one buyer, the National Health Service. Neither British competitor became significant internationally, and Boots exited the industry in the early 1980s.

Direct cooperation among competitors, an approach advocated as a means of avoiding duplication and reaping economies of scale, undermines competitive advantage unless it takes some limited and specific forms. It eliminates diversity, saps incentives, and slows the rate of industry improvement. There is a role for cooperation through trade associations and other independent entities to which many firms have access. I will discuss guidelines for beneficial cooperative activity in Chapter 12.

New Business Formation. Intense domestic rivalry depends on new business formation to create new competitors. New business formation is also vital to the upgrading of competitive advantage, because it feeds the process of innovation in an industry. New companies serve new segments and try new approaches that older rivals fail to recognize or to which they are too inflexible to respond. New entrants are often the "outsiders," willing to take unconventional approaches to competing for reasons I discussed in the previous chapter. New business formation is also integral to the way in which one determinant reinforces others (Chapter 4). For example, aggressive rivalry among competitors leads to entry into supplier or related industries. The active formation of new competitors in the industry, by one means or another, was part of the history of virtually every internationally successful industry we studied.

The process by which new businesses are created in a nation bears importantly on the competitive advantage of national industries. There are two basic mechanisms by which new businesses are formed. One is the establishment of entirely new companies, whether they are spin-offs from established firms, are founded by employees of suppliers and customers, or are the result of ideas gleaned during academic training or university research. The national circumstances that promote this form of new business formation are varied.

One local rival in a nation frequently leads to others through the mechanism of spin-offs. Frustrated (or ambitious) employees with good ideas leave to form their own company, often nearby. One spin-off encourages others. The dynamic of spin-offs is often healthy for the national industry. It creates more rivalry. It also unlocks new product and process innovations that were stifled by inertia or conflicts with existing strategies. It leads to the serving of new segments or segments that were ignored.

Spin-offs are not equally prevalent in every nation, nor during every phase of industry development.[63] However, they were common in the internationally competitive industries we studied. Many of America's minicomputer firms are descendants of a company called General Automation (GA). For example, Digital Equipment grew out of GA, and Data General emerged out of Digital. Control Data, the early leader in what are now called supercomputers, gave birth to the current world leader, Cray Research. In the Italian packaging machinery industry, one firm (ACMA) led directly or indirectly to more than two hundred competitors, all located near Bologna.

Each of the other determinants plays some role in determining those industries in which new companies appear. Factor conditions, in the form of a pool of skilled and specially trained personnel, are a prerequisite for founding new businesses. So is access to risk capital, especially in industries where capital requirements cannot be met with individual savings and internally generated funds. Favorable demand conditions attract new entrants. The motivation of individuals is also important. National prestige and priorities can influence the industries to which outstanding people are attracted. The existence in the nation of the institutions from which new businesses typically emerge in a particular industry is also important: America has many start-ups in industries where new ideas grow out of university research laboratories, while Japan has but a few. Japanese researchers typically join the research staffs of larger companies. Finally, the nature of buyer, supplier, and related industries is also important because they are sources of personnel and ideas to form new companies.

The other mechanism for new business formation is internal diversification into new industries by established firms (acquisition is rarely new business formation, because no new entity is created).[64] National success in an industry benefits from active internal entry by firms from related industries. Diversification through internal development is almost always through related diversification, because creating a new entry from scratch almost demands that a company possess a base of relevant skills. Knowledge and assets are transferred from the existing to the new business, enhancing the prospects for competitive advantage. Conditions which foster active internal entry into an industry by firms from related fields are a potent source of national competitive advantage.

The prevalence of internal development in a nation is most affected by the goals of firms (see earlier) but also reflects other institutional characteristics. Internal entry is very common in Japan, Korea, and Germany where much diversification has historically been by means of start-ups, and acquisitions are rare. In Japan, for example, a long time horizon, the desire to redeploy employees freed up by productivity improvements, and historical difficulty in making acquisitions has led to widespread internal development by established firms. Internal development used to be commonplace in America and continues in a few sectors such as consumer packaged goods, business services, and health care (all areas of national advantage). By and large, however, shifting goals have led American companies to focus on acquisitions, many unrelated to their core businesses.

The industries in which internal development occurs, as in the case of start-ups, is a function of the "diamond." I will have more to say about these connections in Chapter 4.

THE ROLE OF CHANCE

The determinants of national advantage shape the environment for competing in particular industries. In the histories of most of the successful industries we studied, however, chance events also played a role. Chance events are occurrences that have little to do with circumstances in a nation and are often largely outside the power of firms (and often the national government) to influence. Some examples which are particularly important in influencing competitive advantage are the following:

- Acts of pure invention
- Major technological discontinuities (for example, biotechnology, microelectronics)[65]
- Discontinuities in input costs such as the oil shocks
- Significant shifts in world financial markets or exchange rates
- Surges of world or regional demand
- Political decisions by foreign governments
- Wars

Chance events are important because they create discontinuities that allow shifts in competitive position. They can nullify the advantages of previously established competitors and create the potential that a new nation's firms can supplant them to achieve competitive advantage in response to new and different conditions. The advent of microelectronics, for example, was enormously important in neutralizing American and German dominance in numerous electromechanically based industries. It provided an opportunity for Japanese firms (and others) to gain position. Similarly, a surge in demand for ships gave Korea the opportunity to enter the shipbuilding industry against Japan. The apparel industry developed in Singapore after Western ations placed quotas on apparel imports from Hong Kong and Japan, while

the world-leading Korean wig industry prospered only after America banned imports from China during the cold war.

The determinants of national advantage work together as a powerful system for sustaining advantage. However, this system is to some extent specialized to a particular industry structure. A discontinuity is necessary to alter the bases of advantage enough to allow a new specialized national "diamond" to supplant another.

Chance events play their role partly by altering conditions in the "diamond." Major shifts in input costs or exchange rates, for example, create selective factor disadvantages that catalyze periods of significant innovation. Wars viewed from this perspective can raise the level and urgency of local scientific investments (factor creation) and disrupt customer relationships (demand conditions). World War I caused the loss of foreign assets and trademarks (including Bayer aspirin) of German chemical companies. It also provided a dramatic stimulus for the chemical industries in the United States, the United Kingdom, and Switzerland. Because of their neutrality in World War II, Switzerland and Sweden benefited enormously in many industries.

Chance events have asymmetric impacts on different nations. The two oil shocks hit energy-dependent nations earlier and harder. Wars often have very different effects on winners and losers. It is interesting that the defeated powers, Germany, Japan, and Italy, are perhaps the three most successful nations in the postwar period in terms of broadly based success in international competition.[66] Nations that feel the effect of a chance event first, or most severely, may move early to deal with it. The oil shocks ultimately helped upgrade Japanese industry, because Japan was especially vulnerable to energy costs and took aggressive steps toward energy conservation.

While chance events can allow shifts in competitive advantage in an industry, national attributes play an important role in *what nation exploits them*. The nation with the most favorable "diamond" will be most likely to convert chance events into competitive advantage. This will reflect an environment aligned to the new sources of advantage and firms pressured to move most aggressively to seize them.

INVENTION, ENTREPRENEURSHIP, AND CHANCE

Invention and entrepreneurship are at the heart of national advantage. Some believe these acts are largely random; a visionary or inventor might be located in any nation, which means that the birth of a world-class industry can take place anywhere. If we accept this view, the determinants become important in developing an industry but its initial formation is a chance event.

Our research shows that neither entrepreneurship nor invention is random; assigning a role to chance does not mean that industry success is wholly unpredictable. For example, the United States is such a favorable environment for commercializing medical innovations that dozens of American entrepreneurs sprang up in most new product and service areas. In fact, foreign entrepreneurs have come to the United States to start their medical products companies because it is such a hospitable environment for this particular sector.

The determinants play a major role in locating where invention and entrepreneurship are most likely to occur in a particular industry. Demand conditions signal needs better in some nations than others. National factor creation mechanisms affect the pool of knowledge and talent. Supplier industries provide crucial help or are the source of new entrants. And so on. What looks like chance is actually the result of differences in national environments. The particular firm or individual that will do the innovating is less predictable, though, than the nation or nations in which they are likely to be located.

Sometimes the act of invention is indeed wholly decoupled from other national characteristics. For example, insulin was first isolated in Canada despite the lack of particularly favorable demand, scientific infrastructure, or other national circumstances bearing on insulin. Whether such pure inventions, or isolated acts of entrepreneurship, develop into a competitive industry, however, is again not random. The "diamond" has a major influence on the ability to convert an invention or insight into an internationally competitive industry. If a nation has only the invention, other nations' firms will be likely to appropriate it. Insulin, for example, was turned into an international commercial success by companies based in Denmark and the United States, not in Canada. Both Denmark and the United States possessed favorable demand conditions, specialized factor pools, and other advantages. Therefore, the invention, once the basic technology was known, took root and prospered elsewhere.

THE ROLE OF GOVERNMENT

Having described the determinants of national competitive advantage, a final variable is the role of government. Government is prominently discussed in treatments of international competitiveness. Many see it as a vital, if not the most important, influence on modern international competition. Government policy in Japan and Korea is particularly associated with the success these nations' firms have enjoyed.

It is tempting to make government the fifth determinant. Yet this is neither correct nor the most useful way to understand government's role in international competition. Government's real role in national competitive advantage is in influencing the four determinants. This is illustrated schematically in Figure 3–5, which now reflects the complete system.

Government can influence (and be influenced by) each of the four determinants either positively or negatively, as should be evident from some of my earlier examples. Factor conditions are affected through subsidies, policies toward the capital markets, policies toward education, and the like. Government's role in shaping local demand conditions is often more subtle. Government bodies establish local product standards or regulations that mandate or influence buyer needs. Government is also often a major buyer of many products in a nation, among them defense goods, telecommunications equipment, aircraft for the national airline, and so on. The way this role as a buyer is played can either help or hurt the nation's industry.

Government can shape the circumstances of related and supporting indus-

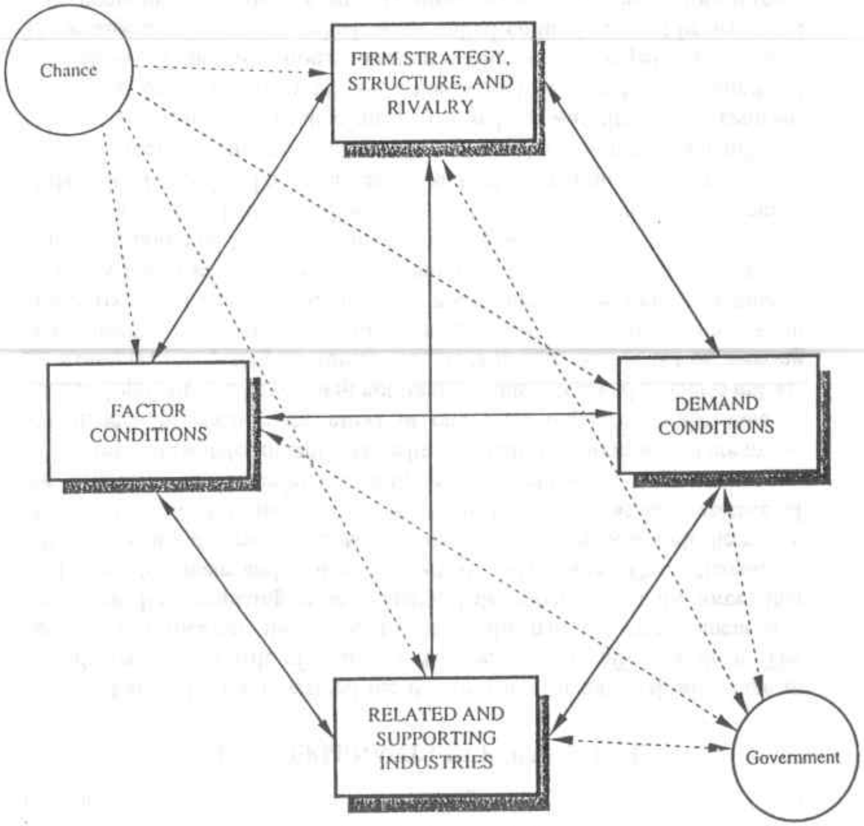

Chance
FIRM STRATEGY, STRUCTURE, AND RIVALRY
FACTOR CONDITIONS
DEMAND CONDITIONS
RELATED AND SUPPORTING INDUSTRIES
Government

FIGURE 3–5 The Complete System

tries in countless other ways, such as control of advertising media or regulation of supporting services. Government policy also influences firm strategy, structure, and rivalry, through such devices as capital market regulations, tax policy, and antitrust laws.

Government policy, in turn, can be influenced by the determinants. Choices about where educational investments are made, for example, are affected by the number of local competitors (see Chapter 4). Strong home demand for a product may lead to early introduction of government safety standards.

It is evident that the influence of government on the underlying determinants of national competitive advantage can be positive or negative. By stimulating early demand for facsimile machines, for example, the Japanese government aided competitive advantage. Facsimile documents were approved as legal documents by the Japanese Ministry of Justice, and Japan was among the first nations to allow the connection of facsimile machines to normal telephone lines. Yet if government regulation or purchases lead to unusual or anachronistic early demand that distracts local firms from serving international markets, the role of government is negative. For example, the highly restrictive Italian regulation of local financial markets has contributed to the inability of Italian financial institutions to compete internationally.

The positive and negative roles of government in the process of creating competitive advantage are highlighted and clarified by viewing government as an influencer of the national ''diamond.'' A far broader array of public policy options and outcomes is possible than is normally explored. The determinants suggest government policies that are starkly different in some cases from those suggested by a less holistic conception of national advantage. Attempting to hold down the value of a nation's currency, for example, appears desirable if factor costs are seen as the dominant determinant of national advantage in a static world in which technology and skills are constant. My theory emphasizes that market pressures and resulting innovations can overcome factor costs, however, so that undervaluation can slow the upgrading of competitive advantage and direct firms to less sustainable, price-sensitive market segments. The result is a long-term loss of competitive advantage. Government ''help'' that removes the pressures on firms to improve and upgrade is counterproductive.

Government has an important influence on national competitive advantage, though its role is inevitably *partial.*[67] Government policy will fail if it remains the only source of national competitive advantage. Successful policies work in those industries where underlying determinants of national advantage are present and where government reinforces them. Government, it seems, can hasten or raise the odds of gaining competitive advantage (and vice versa) but lacks the power to create advantage itself. I will return to all these issues when I discuss government policy (Chapter 12).

THE DETERMINANTS IN PERSPECTIVE

In this chapter I have described the determinants of national advantage in an industry and the role of chance and government in affecting them. The determinants measure the extent to which the national environment is a fertile one for competing in an industry. I described earlier the forces that lead firms to create and sustain competitive advantage. The ''diamond,'' reflecting many diverse elements of a nation, measures how well the nation creates and transmits these forces to its firms, as well as the presence of the insight and tools needed for competitive advantage.

The individual determinants that define the national environment are mutually dependent because the effect of one often depends on the state of others. Sophisticated buyers will not translate into advanced products unless, for example, the quality of human resources is sufficient to act on meeting buyer needs. Selective factor disadvantages will not motivate innovation unless rivalry is healthy and company goals support sustained investment. At the broadest level, weaknesses in any one determinant will constrain an industry's potential for advancement and upgrading.

As I have described the ''diamond,'' I have touched on many examples of the role of social and political history and values in influencing competitive success. Social norms and values affect the nature of home demand, for example, as well as the goals of managers and the way firms are organized. Social and political history influence the skills that have been accumulated in a nation and the institutional structure within which competition operates. These aspects of a nation, which some called cultural, cannot be separated from economic outcomes. Also, ''cultural factors'' are, upon close inspection, often closely intertwined with economic factors. For example, Japanese management-labor relations are not particularly cultural but a function of lifetime employment, the nature of incentive systems, and management behavior toward workers. These practices all grew out of bitter labor strife in Japan both before and immediately after World War II.

Cultural factors are important as they shape the environment facing firms; they work through the determinants, not in isolation from them. Such influences are important ones to competitive advantage, however, because they change slowly and are difficult for outsiders to tap or emulate. Social and political history and values create persistent differences among nations that play a role in competitive advantage in many industries. They will be apparent when I turn to individual nations in Part III.

I have had little to say in this chapter about leaders, a popular subject in historical analyses of industrial or national success. This is not to diminish the importance of leaders but to suggest that they too do not work separately from the determinants I have described. Leaders confront problems, challenges, and opportunities that are produced by their national environments. Leaders are attracted to different problems in different nations, a function of the determinants. In Japan, revered leaders such as Akio Morita and Konosuke Matsushita work in consumer electronics. In America, individuals such as Thomas J. Watson, Jr., Seymour Cray, Kenneth Olson, and Steve Jobs work or have worked in computers. These are both instances of industries where the national environment is particularly favorable for competitive advantage. The success of leaders depends on possessing insights into opportunities and the tools to exploit them, about which this chapter has had much to say.

Indeed, one definition of a leader is someone who understands and believes in the determinants more than other individuals. Leaders believe in dynamics and change. They do not accept constraints, and know that they can change the nature of outcomes. They are in a position to perceive something about reality that has escaped others, and have the courage to act. It is often leadership that determines *which* of the firms from a favorably situated nation will succeed and fail.

So far, I have described the determinants of national advantage singly and jointly. But the ''diamond'' is an interactive system in which the parts reinforce each other. These dynamics will be the subject of the next chapter, along with their implications for the emergence and development of competitive industries and their eventual loss of competitive advantage.

20

WHARTON REPROGRAPHICS

ANATOMY OF A START-UP

Nowhere Men

No store. No catalog. No sales staff. Is this the future of retailing? ▪ BY JOHN GROSSMAN

A BEIGE BOX SITS ON THE FLOOR, under a Formica-topped table. Wires connect the box, a $60,000 Sparc 20 workstation, to various disk drives and to two battery backups. Every flash of a tiny red light on one of the disk drives indicates that somebody is in the store and shopping.

Store? What store?

CDnow, a Generation X–launched start-up that sells music CDs, cassettes, and a few additional products, doesn't have a traditional retail store with walls, aisles, fixtures, and products that customers purchase at cash registers. CDnow exists only in cyberspace, where commercial sites are popping up like mushrooms after a rain. But CDnow is unlike most of the tens of thousands of .com sites on the World Wide Web, the majority of which are foot-in-the-door, me-too enterprises struggling to connect existing businesses to the Internet. CDnow was conceived from day one as a low-overhead, virtual business, and it is already making money. An Internet vet approaching the second anniversary of its maiden on-line sale, this rapidly growing basement start-up has sprinted to an early lead in a wild and lucrative race—grabbing market share in the brave new world of Internet commerce, which, according to a report from International Data Corp., should grow to $150 billion to $200 billion by 2000.

WEB START-UP: Twins Jason (left) and Matt Olim may reinvent music retailing.

Piloting CDnow into that turbulent, uncharted future are company founders Jason and Matthew Olim, fraternal twins who were not yet two months old when the Woodstock rock festival immortalized Max Yasgur's farm. Both tie their long brown hair in ponytails, prefer socks to shoes in the office, wear worn jeans, and look like a couple of primo slackers.

Some slackers. Both recall the last two years as a blur of 16- and 20-hour days. Jason, who conceived the notion of an Internet music store, is the entrepreneurial twin, an outgoing deal maker, the corporate visionary. Brother Matt is the back-shop programming wizard. Happiest when he's writing elegant computer code, he prefers to labor in the wee morning hours.

As recently as February, the brothers were adding an employee a week to their company and had just built the head count to two dozen. Of the staff they hired, only their controller has ever blown out 30 candles on a birthday cake. Music posters adorn the walls of the company's new offices in Penllyn, Pa., near Philadelphia. Salaries are low, and the energy level is high—as one would expect at a small, cutting-edge company that is doubling its sales every couple of months, in an industry in which entry barriers are few and new entrants plentiful.

And no one is more surprised at all of that than Jason Olim. While he was still a programmer for a software company in February 1994, he was sitting

the cranberries
FREE SHIPPING
CDNOW
biggest fastest best
music
ROLLING STONES
STRIPPED
Apple Computer

Executive Summary

COMPANY: CDnow, an Internet retailer of music CDs, based in Penllyn, Pa.

CONCEPT: Create a successful cyberstore and then license the pioneering Web-site and order-fulfillment software to other cybermerchants

PROJECTIONS: Second-year sales in 1996 of $10 million

COMPETITIVE ADVANTAGE: Boundless energy, early start

HURDLES: Luring consumers to this new shopping venue; outmaneuvering the inevitable 800-pound competitive gorillas

The Founders

JASON OLIM, 26, president. Graduated from Brown University, with computer-science degree. Favorite music: XTC, Bach

MATTHEW OLIM, 26, vice-president. Graduated from Columbia University, with astrophysics degree. Favorite music: Nirvana, Pearl Jam

FAMILY: Live at home with their mother, a hospital nutritionist, and their father, a dermatologist

PERSONAL FUNDS INVESTED: Jason's $14,000

EQUITY HELD: 50% each

TYPICAL HOURS: Jason works 10 a.m. to 11 p.m., six days a week; Matthew, noon to 3 or 4 a.m., every day

‘We were going to eat pizza and manage a computer. I never expected to sell $2 million in CDs in my first year.’

in a bar with friends when the idea of setting up shop on the Internet struck him as a perfect way to create a new kind of music store that could address the glaring gaps he saw in most music retailers' customer service. Too often he found their salesclerks unhelpful and unknowledgeable and their selection limited—problems an on-line store could easily avoid while simultaneously achieving another advantage: convenience. Shoppers could enter Jason Olim's cyberstore in seconds from their home or work computers without fighting through bad weather, snarled traffic, or crowded shopping malls. Instead of flipping through finite racks of ill-sorted CDs, they could click immediately on virtually any title, because Jason's store would never stock or warehouse a single compact disc. He'd fulfill orders by tapping the combined inventories of other companies in the distribution chain. Equally important, he'd add value by improving the shopping experience. Browsers would find themselves only a mouse click away from performer profiles and album reviews, concert information, and more. A limited sampling of selected CDs would also be available.

THE INTERNET'S PHANTOM ECONOMIES

An Internet store sounds great: there's no rent, no build-out costs, and no inventory, and most of the work is done by computers. But reality is something else. The chart below compares CDnow's estimated monthly expenses with those of a typical three-store retail chain doing approximately the same sales volume.

MONTHLY EXPENSE	CDNOW	RETAIL CHAIN
Rent	$2,500	$12,000
Fixtures and improvements	$0	$3,500
Utilities	$900	$3,000
Wages	$50,000[1]	$32,000
Telephone	$2,500	$1,000
Internet connection	$2,000	$0
Inventory	$0	$0[2]
Credit-card fees	$10,000	$4,000[3]

[1] CDnow doesn't break down its payroll costs, but a significant portion of its employees' time is spent on non-CD-related software and product development. [2] Assumes frequent turnover and good supplier terms. [3] More than half of the retail stores' sales are cash.

THE FINANCIALS (in thousands)

	1995	1996*	1997*
Sales: from CDs and other products	$2,000	$10,000	$30,000
from advertising and promotional fees	$10	$1,000	$3,000
from licensing of technology	$30	$1,000	$3,000
Expenses and overhead	$2,000	$9,000	$27,000
Profits	$40	$3,000	$9,000

*Jason Olim says that projections are "outrageously difficult" for him to make. A tripling of sales for 1997 "feels" about right. Expenses, and therefore profits, he says, are even harder to estimate in what is a wholly new kind of retail business.

The younger (by 40 minutes) Olim's draft business model was almost naïve in its simplicity, which is unsurprising, as his entrepreneurial résumé began and ended with the house-painting service he ran for two summers while at Brown University. "I'll get my CDs wholesale, ordering them from the warehouse when the customer orders them from me. All I've got to do," he remembers thinking, "is charge more than I'm paying, and that difference times the volume has to be enough to pay for my computers and my salaries." Another thought crossed his mind, too. A successful on-line CD store would be his demo. If it made sweet music, he could leverage its reputation to get him into the business of showing others how to create and operate their own cyberstores.

"I was imagining three people. We were going to manage a computer and eat pizza," he says. "I never expected to sell $2 million worth of CDs in my first year." But back in February 1994, the Web barely existed. In 1995, CDnow's first full year of business, the number of Web users jumped eightfold, from one million to 8 million, according to International Data. That number has probably shot past 13 million by now.

Though Olim didn't anticipate the salutary effects of so many new Net surfers, he did count on the low overhead costs of founding and running a virtual business. CDnow's start-up costs, as he figured, proved minimal. He spent $1,500, which he'd saved for a bass guitar, on a new computer, and another $500 for a software license. He soon tapped his savings for an additional $12,000. But except for that and a $70,000 loan from an outside investor that he has begun to pay back, he has financed the growth out of revenues.

Working in the basement of his parents' house after work and on weekends, Jason began building the "store"—a possibility only because it required no real estate, no bricks and mortar, and no inventory. He did need thousands of lines of computer code, the writing of which he soon relinquished to brother Matthew. The older twin quickly grew adept at

HIGH-TECH PLANS: Besides CDs, CDnow hopes to market its software technology—even to competitors.

building the intricate software necessary to construct and manage an interactive Web site. He also became obsessed with harnessing the commercial capabilities of an exciting new medium. Month after month, seven days a week, he worked nearly round the clock, often brushing his teeth in front of the computer. Meanwhile, Jason forged links with so-called one-stops, music-industry wholesalers that stock discs from most distributors. It didn't hurt that the father of one of Jason's college fraternity brothers headed one such company, Valley Records Distributors Inc.

In August 1994, six months after Jason's vision at the bar, CDnow sold its first album. First-month sales totaled $392. During the same month a year later, sales of CDs, cassettes, and T-shirts brought in $189,000. In 1995 sales for the company's first full year reached $2 million, more than double Jason's projections. So far, the on-line music store has continued to hit mostly high notes. By February of this year, CDnow was attracting well over 300,000 shoppers a month and ringing up 300 orders a day. The average order: $40. "We're now the size of a chain of 10 retail stores," says Jason. "And I expect to triple in size by the end of the year." CDnow regularly appears on various top 10 lists of hot Web sites. A review in the May 1995 issue of *NetGuide* gushed, "CDWOW! might be a better name."

Inevitably, as other entrepreneurs have also spotted a product well suited to on-line commerce (one that comes essentially presold and doesn't need to be tasted, touched, or tried on), CDnow has been joined by a chorus of competitors—easily more than 100 that sell some kind of music and at least 10 with the kind of product range and backlist that CDnow has. Many of those sites will likely shake out, but serious threats loom at such on-line addresses as Music Boulevard, which recently merged with N2K, a multimedia-development company, and 1-800 MUSIC NOW, MCI's phone-order CD business, which recently added a Web site.

"CDnow is by far the biggest and the best, the one we like the most," says Barney Cohen, chairman and chief executive of Valley Records, which currently fulfills orders for CDnow and some two dozen other cyberstores. Valley's shipments provide a window on rising music sales over the Internet. In its fiscal year 1996, which ended this past March 31, Valley wholesaled $5 million in Internet orders. Over the next year, says Cohen, "we hope to do $15 million to $20 million, and that's a conservative projection."

Even $20 million is still small change in the multibillion-dollar recording industry. But no one doubts that on-line commerce will get a slice of that juicy pie. The question is, How big a slice? Jason figures that Web sites should be able to capture most current mail-order and record-club sales, pegged by the Recording Industry Association of America at nearly 20% of the $12.3-billion nationwide recorded-music market. "In five years, minimum, I think you'll see $1 billion of CD transactions on-line, and it could be $5 billion, depending on how the Internet takes off," Jason predicts, boosting his estimates by factoring in worldwide sales.

A key determinant of the growth of Internet commerce is the growing willingness of consumers to provide their credit-card numbers for on-line transactions, although they are still somewhat cautious. Consumer hesitancy on that issue, Jason believes, will soon disappear.

In truth, he can ill afford the added costs of handling checks and manually entering orders from incoming faxes. CDnow's gross profit margin—reached by buying from the one-stops and selling, on average, about 10% below typical retail store prices—stalls at about 12%. On a new release—say, Jackson Browne's *Looking East*, which CDnow recently offered for $13.96—a 12% gross margin yields about $1.70. (The additional $2.49 for shipping and handling covers just that.) Although its overhead is low, the Olims' virtual store still incurs expenses. CDnow must purchase the electronic rights to publish material from *The All Music Guide*, a database and publication that provides reviews and artist biographies. It must buy digitized jewel-box artwork so shoppers can call up album covers on demand. To add more value to its store, CDnow produces topical and promotional attractions. For instance, before Grammy Awards night, shoppers might have a chance to learn about the Top 30 Artists Never to Win a Grammy; or they might win a trip to meet Clint Eastwood by locating Eastwood's favorite hat and gun during a cybertour of his new CD-ROM. Furthermore, the company has opened a three-person satellite office in Los Angeles to help develop those on-line features. Total all the expenses, and that 12% margin shrinks down mighty thin.

"They can't get rich on the store," notes Valley's Barney Cohen. Don MacKinnon, president of Hear Music, a chain of nine retail music stores founded on the concept of adding information and service to the buying experience, is more blunt about the Olims' prospects: "If he's only able to eke out 12%, it's going to be very challenging."

Jason Olim has a more hopeful view, for at least a couple of reasons. The first: growing volume. "The rule I've kept applying is, If it adds value, you can do it," he says, admitting that he has sacrificed margin to continually improve his Web site. He believes increased volume will boost profits, thanks to economies of scale. "To double your business, you only have to add another memory chip." Second, other revenue streams will help even if margins on CD sales stay low.

A trickle of money has already begun to flow in in the form of advertising dol-

PHOTOGRAPH JAMES WASSERMAN

Jason Olim hopes other Web businesses will license his software and pay him to manage their on-line stores.

lars—something Jason Olim didn't factor into his original concept. CDnow was one of only a few dozen Web sites chosen earlier this year for tests of on-line ads for the Microsoft Network. The Olims charged 4¢ an impression (someone's clicking on a page carrying the ad); they guaranteed and delivered 100,000 impressions, thus bringing in $4,000. Though the success and eventual rates of on-line advertising remain anyone's guess, it's reasonable to assume that more traffic in the store will boost the amount that advertisers are willing to spend.

Moreover, it may be possible for CDnow to perform and be paid for playing multiple roles—as ad agency, production house, and publisher, and, of course, as retailer of the product being promoted. Such was the case with a uniquely targeted campaign for Geffen Records. Appearing only on computer screens linked to CDnow via .edu domains was this message: "Hey, you! The college kid in front of the screen. Get 10% off all Geffen titles." Those who failed to click on that banner to learn more about the offer were blasted a few Web pages later with an in-your-face follow-up, inappropriate for classical-music lovers but suitable for university-linked Internet surfers. "Hey!" the message read. "We asked you nicely the first time, now get your ass in here."

"Advertising is going to be very critical to us," says Jason, who estimates that ad and promotional revenues should reach $1 million this year and $3 million next year.

He's counting on similar revenues from licensing CDnow's technology to other cyberstores—even direct competitors. "I think it's the most advanced system on the Internet," he says, confident others will see the merits in paying him, say, $300,000 for a license to use his technology, as well as ongoing fees to manage their stores and fulfill orders.

In March the Olims began building both a music store and a movie store for an unspecified client. Jason realizes that big players like Tower Records, whose cyberstore is currently located on America Online, will cast big competitive shadows. "We all recognize this thing as a huge, huge, huge potential pie," he says. "We're not really jockeying for our slice as much as we're looking to be part of this thing when it builds. As Homer Simpson says, 'When the saints come marchin' in, I want to be part of that rhumba.'" Accordingly, CDnow appears to be mapping out an "If you can't beat 'em, join 'em" strategy, envisioning the kinds of strategic alliances—America Online with Netscape and Microsoft, for instance—that are already molding Internet commerce.

"Everyone always asks, 'Where are your barriers to entry, where's your defensible position?'" Jason says, explaining that CDnow has exciting plans for its Web site—including live concerts. "But ultimately, I would rather be somebody

WHAT THE EXPERTS SAY

■ ■ ■

Don MacKinnon
President of Hear Music, a nine-store retail chain based in Boston

CDnow is extremely well positioned as the leading Internet retailer. It's capturing an audience the record companies are desperate to reach, so it should be able to improve its poor product margins by attracting substantial advertising dollars.

COMPETITOR

One of the Olims' key challenges will be competition. CDs are the first "proven" Internet merchandise, so everyone is going to jump into the game. The winner will be the company that finds the best way to use the technology to enhance the customer's experience. CDnow should focus on what Jason calls "adding value" and on what I call building a brand.

■ ■ ■

Michael Sullivan-Trainor,
Director of Internet commerce at International Data Corp., in Framingham, Mass.

CDnow is a sterling example of how the Web allows start-ups to come from nowhere and capture a significant share of media and consumer interest. Because it does business on the Web, CDnow can act like a national or even a global distributor, with low overhead and fast delivery. But there are no barriers preventing new start-ups or giant corporations from copying the company's success. That is the value paradox of the Web: anyone can create a storefront, but no one can create dominance.

INDUSTRY OBSERVER

In the future, Web storefronts such as these may turn over much higher volumes of business, thus generating greater margins for their owners. But that day will not come until consumers are comfortable with making credit-card purchases on-line, and that confidence will come as more large corporations enter this channel. CDnow and other young companies need to stay in the game long enough and remain distinctive enough to rise with the tide of on-line commerce. CDnow's experience to date suggests that it can go the distance.

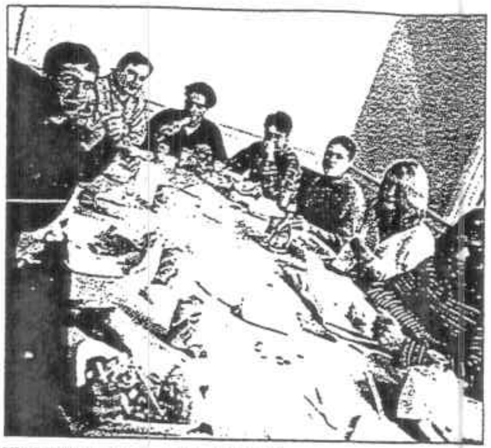
■ ■ ■

Jim Coane
President of N2K Inc., in Wayne, Pa., which operates Music Boulevard, a Web retailer

I would not underestimate the competitive advantages rooted in spirited and creative entrepreneurship, nimbleness, responsiveness, plain old hard work, and being early to market—all characteristics of CDnow. It's going to be very tough, however, for the small, under-resourced competitor. Getting big fast is critical, and that takes access to resources—peoproviding value where I have the most value to add, which is at the technology level, than be somebody who's fighting the marketplace. I've always thought, 'Make socks.' Be in the least-glamorous business and you'll have a defensible position."

Cohen's advice to the Olims: "Run like hell." And, he adds, they should build other cyberstores as fast as they can, while they continue to enhance their existing site in order to attract the million shoppers a month Jason envisions. That way, Sony and other labels would be crazy to crush them, because CDnow would be too valuable to them as a promoter and merchandiser to kill. In their favor, the Olims have almost no debt and still own 100% of the company. In a jam they should be able to raise capital by selling a stake in CDnow. Buyers shouldn't be hard to find; the Olims have already turned aside several offers.

The unavoidable question: Can an entrepreneurially inexperienced 26-year-old, even one with vision beyond his years, go toe-to-toe with the big boys and prevail in such a high-stakes race? To date, Jason has steered the company with help from the Wharton Small Business Development Center and the Owen Graduate School of Management at Vanderbilt University, suggestions from his staff, confirmation and admonishment from Matthew, feedback from friends, and assistance from business advisers he's cultivated—a few of them through cold calls.



VIRTUAL STORE, REAL PEOPLE: CDnow's staffers are as young as its founders.

One of the company's biggest problems, Jason says, is focus. "There's so much we can do." CDnow already sells magazines; a move into movies, which promise higher margins than CDs, seems likely. A deal maker even in college, when he ran charity auctions, Jason thrives on piecing together deals from which everybody benefits, especially consumers. Those who know him describe him with words like *brilliant* and *visionary*. He'll have none of that. "I'm a good listener," he says. "I think one of the things I do best is go to people and learn. I have very little ego when it comes to what I think I know. I have a lot of good advisers, and I know how far to trust them and how to challenge their assumptions."

To those who say the race to Internet riches will go to those with clout and resources, he says, Not necessarily. "The key is vision, drive, and execution." And, he might have added, quick and sure reactions to fast-changing circumstances. Having gotten in early, he's now deep in a fast-changing field in which new businesses breed like bunnies, Web pages can be changed with a few keystrokes, and nobody can see anything but the dim outline of the future. "Every week is a revolution," he says, eager to visualize and build the store of the future. ■

ple and money. Sustainable, long-term competitive advantages will be built around value propositions that are different from those existing today. CDnow and other companies will have to create revenue streams from sources other than the sale of CDs and advertising.

I also would not underestimate the competitive advantages derived from years of on-line experience, leadership and management from seasoned industry executives, valuable strategic alliances, innovative distribution relationships, proven technology infrastructure, and substantial financial and technical resources—all characteristics of our company.

COMPETITOR

■ ■ ■

Pamela Horovitz

President of the National Association of Recording Merchandisers, in Marlton, N.J.

INDUSTRY EXPERT

There are already data suggesting that computer users are often active music buyers. Also, the recent explosive growth in mail order and the direct-mail marketing of music should enhance CDnow's niche.

On the downside, price-driven search engines that allow shoppers to check the whole Web for the lowest price could quickly put pressure on CDnow's already slim margins. Second, traditional music retailers have been adding interactive kiosks that offer increasingly detailed information about records, including those the retailer may not stock, and listening stations that allow customers to sample the music. Those innovations may combine to devalue the value-added aspects of CDnow's Web site. Third, well-established brand names—Sony Music, Tower Records—will undoubtedly provide some well-financed competition, putting pressure on the uniqueness of the CDnow concept.

I would urge CDnow to carefully identify its future focus. For example, I'd be looking closely at offering games and other multimedia software through the on-line store. The browser software should work well for those products, and there are probably software distributors willing to play the same fulfillment role that CDnow's music suppliers do now.

READER POLL

■

Does CDnow have a future in retailing? Why? Why not? What mistakes have the Olims made so far? Tell us what you think by E-mailing your views to anatomy@incmag.com or by faxing them to 800-335-3348. We'll report your responses when we do an update on CDnow's performance.

PHOTOGRAPH, TOP: JAMES WASSERMAN

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WHARTON REPROGRAPHICS

CRITERIA USED BY VENTURE CAPITALISTS TO EVALUATE NEW VENTURE PROPOSALS*

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EXECUTIVE SUMMARY

A questionnaire was administered to one hundred venture capitalists to determine the most important criteria that they use to decide on funding new ventures. Perhaps the most important finding from the study is direct confirmation of the frequently iterated position taken by the venture capital community that above all it is the quality of the entrepreneur that ultimately determines the funding decision. Five of the top ten most important criteria had to do with the entrepreneur's experience or personality. There is no question that irrespective of the horse (product), horse race (market), or odds (financial criteria), it is the jockey (entrepreneur) who fundamentally determines whether the venture capitalist will place a bet at all.

The question is if this is the case, then why is so much emphasis placed on the business plan? In a business plan there is generally little to indicate the characteristics of the entrepreneur—it is generally devoted to a detailed discussion of the product/service, the market, and the competition. To us, the implications are obvious—such content is necessary, but not sufficient. The business plan should also show as clearly as possible that the "jockey is fit to ride"—namely, indicate by whatever feasible and credible means possible that the entrepreneur has staying power, has a track record, can react to risk well, and has familiarity with the target market. Failing this, he or she needs to be able to pull together a team that has such characteristics and show that he or she is capable of leading that team.

Factor analysis of the results indicate that venture capitalists appear to assess ventures systematically in terms of six categories of risk to be managed. These are: risk of losing the entire investment; risk of being unable to bail out if necessary; risk of failure to implement the venture idea; competitive risk; risk of management failure; and risk of leadership failure.

Finally, three clusters of venture capitalists were identified: those who carefully assess the competitive and implementation risks; those who seek easy bail out; and those who deliberately keep as many options open as possible.

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THIS ARTICLE REPORTS A FORMAL STUDY OF THE CRITERIA USED BY VENTURE capitalists when they evaluate venture proposals. The objectives of study were threefold. First, it was intended as a follow up and replication of the study reported by Tyebjee and Bruno (1981), but for a broader group of venture capitalists and at a later period in time.

Second, it is hoped that the results will provide members of the venture capital community (as well as other institutions providing funds for new ventures) with an aggregate picture of what the most common current criteria are and what current weights are being attached to each criterion by their peers. Finally, the results should provide those seeking funds with an idea of what the critical criteria are. They can then assess how their ventures compare with these criteria and take the steps necessary to resolve any major flaws in their proposals before submitting them. Given that most venture capital firms are operated with lean staff, the fact that they are inundated with proposals becomes a significant bottleneck in their operations. Two disadvantages result— first the venture capitalist's time is consumed with the processing, evaluation, and subsequent rejection of flawed proposals, which unneccesarily distracts them from more productive activities; second, some viable proposals are rejected because they have flaws that could have been removed if the entrepreneurs were alerted to them before they were submitted to the venture capitalist.

By expanding venture capitalists' awareness of the weights being attached to various criteria by their peers, and by alerting those seeking venture capital funds to potential flaws that can be rectified before submission, it is hoped that enhanced knowledge of evaluation criteria will help make the venture capital market a little more efficient.

METHODOLOGY

First, fourteen venture capitalists in the New York metropolitan area were interviewed in order to establish what criteria they use in evaluating venture proposals. Twenty-seven such criteria were identified, collated, and assembled in Table 1. The criteria were classed into six major groups. In Table 1 were group I, those to do with the entrepreneur's personality; group II, those to do with the entrepreneur's experience; group III, those to do with the characteristics of product/service; group IV, those to do with characteristics of the market; and group V, those to do with financial considerations. In Table 2 was group VI, those criteria that had to do with composition of the venture team.

These criteria were then assembled into a questionnaire. The first 24 criteria were scaled on a four point scale, as per Table 3. In this questionnaire, a four point scale was deliberately chosen in such a way that each advance up the scale represents a distinct and clear increase in the importance of the criterion.

As a check on consistency, we also asked the respondents to specify the five most important criteria. These selections should correlate highly with the criteria that had been rated highest in the first part of the questionnaire. This turned out to be the case.

The questionnaire was mailed to all members of the National Venture Capital Association, and all members listed in Venture Magazine's 1983 Directory of Venture Capitalists. A total of 150 questionnaires was sent out, and 102 responses were received, indicating a very high level of interest in the project.

In the questionnaire we also asked respondents to list any additional criteria that they considered to be important. Only five additional criteria were suggested, none of which were reported by other respondents. We took this as evidence that the additional criteria suggested were not widely used.

TABLE 1 Criteria and Results

	Mean	SD
I. The entrepreneur's personality		
1. Capable of sustained intense effort.	3.60	0.57
2. Able to evaluate and react to risk well.	3.34	0.73
3. Articulate in discussing venture.	3.11	0.71
4. Attends to detail.	2.82	0.69
5. Has a personality compatible with mine.	2.09	0.81
II. The entrepreneur's experience		
6. Thoroughly familiar with the market targeted by venture.	3.58	0.57
7. Demonstrated leadership ability in past.	3.41	0.67
8. Has a track record relevant to venture.	3.24	0.69
9. The entrepreneur was referred to me by a trustworthy source.	2.03	0.62
10. I am already familiar with the entrepreneur's reputation.	1.83	0.71
III. Characteristics of the product or service		
11. The product is proprietary or can otherwise be protected.	3.11	0.71
12. The product enjoys demonstrated market acceptance.	2.45	0.74
13. The product has been developed to the point of a functioning prototype.	2.38	0.90
14. The product may be described as "high tech."	2.03	0.96
IV. Characteristics of the market		
15. The target market enjoys a significant growth rate.	3.34	0.64
16. The venture will stimulate an existing market.	2.43	0.76
17. The venture is an industry with which I am familiar.	2.36	0.78
18. There is little threat of competition during the first three years.	2.33	0.72
19. The venture will create a new market.	1.82	0.83
V. Financial considerations		
20. I require a return equal to at least 10 times my investment within 5–10 years.	3.42	0.79
21. I require an investment that can be easily made liquid (e.g., taken public or acquired).	3.17	0.89
22. I require a return equal to at least 10 times my investment within at least 5 years.	2.34	0.81
23. I will not be expected to make subsequent investments.	1.34	0.52
24. I will not participate in latter rounds of investment (requires my participation in the initial round of investment).	1.20	0.45

Sample size: 100; scale: 1–4, where 1 means irrelevant and 4 means essential (see Table 3).

TABLE 2 Criteria Relating to Venture Team Composition

CIRCLE THE SINGLE ITEM BELOW THAT IS *ESSENTIAL* FOR THE VENTURE TO GO FORWARD

VI. The venture team

25. The venture is initiated by one person with the relevant experience to his idea.
26. The venture is initiated by more than one individual, each having similar relevant experience.
27. The venture is initiated by more than one individual, the individuals constituting a functionally balanced management team.
28. None of the above are essential for the venture to go forward.

TABLE 3 Questionnaire Format

Based upon interviews conducted with a number of venture capitalists, 27 criteria have been identified as being relevant to the decision to fund a venture.

Please weight the importance you attach to each criterion by circling the appropriate number. A four point weighting system is used with each point being defined as follows:

1. Irrelevant—Not a factor in the decision-making process.
2. Desirable—A factor which improves the likelihood of investment.
3. Important—A factor which must be present in order for an investment to take place, unless other factors specifically compensate for this factor's absence
4. Essential—A factor which must be present under any circumstances in order for an investment to take place.

Such a study has all the weaknesses of a self-report study. It is possible that respondents could be influenced by their perception of what is a desirable response or a response that is seen as appropriate to their position as representatives of the venture capital community, rather than the criteria they actually use. There is also a danger that some respondents may not actually use the criteria in the ways that they think they do. This will be tested in a later study. Given these limitations, the results reported below need to be interpreted with some circumspection.

ANALYSIS OF RESULTS

Means and standard deviations of the responses appear in Table 1. From a review of these means and standard deviations, one can make the following observations.

Personality and Experience

The most important personality characteristics are evidence of staying power and an ability to handle risk. Given the low standard deviation of the result for staying power, it is clear that there was high consensus on the need for staying power.

On the other hand, venture capitalists in general claimed they were not much concerned with whether the entrepreneur had a compatible personality. However, the high standard deviation for this criterion does indicate that some venture capitalists do regard it as important, but not essential.

There was high consensus that the key experience requirement was a thorough familiarity with the target market. Almost as important were demonstrated leadership capability and a track record that is relevant to the venture. Of least concern was the need of the venture capitalist to be familiar with the entrepreneur's reputation.

Product and Market Characteristics

The most important product characteristic appears to be some proprietary protection. On the other hand, venture capitalists claimed that the need for the product to be "high tech" was not important. This is a surprising claim, given that about 70% of all ventures are in the high tech category (*Venture Capital Journal* 1984). However, the high standard deviation for this variable indicates that there are many who regard high tech as important.

The critical market requirement is a high growth rate. In general, other market characteristics were not regarded as important.

Financial Considerations

As expected, the key financial concerns are with high upside potential and high investment liquidity. Most venture capitalists recognize that the payout is only likely in 10 years, rather than 5 years, but still expect a handsome return on that investment. Of least concern—generally considered irrelevant—was whether or not they were involved in the first round of financing and whether or not they would be expected to make subsequent investments. In general, personality and experience concerns dominate the financial criteria, which in turn are regarded as more important than product or market criteria.

FLAWED VENTURES

The next issue of interest is the degree to which certain venture characteristics disqualify them for the venture capitalist. To assess this we identified the 10 criteria that were most frequently rated as essential by the respondents. The results are listed in Table 4. Note that a rating of "essential" means that the responding venture capitalist would reject the plan regardless of any other characteristics, no matter how redeeming.

In Table 4, five of the ten criteria most commonly rated as essential have to do with the entrepreneurs themselves—by and large venture capitalists will not back ventures unless the entrepreneur is capable of sustained effort, has demonstrated leadership in the past, evaluates and reacts to risk well, has a track record relevant to the venture, and is capable of articulating the venture well.

What becomes even more interesting is to identify the characteristics of "critically flawed" proposals—that is, proposals that would be rejected by a significant majority of venture capitalists if they had only two flaws. These results are in Table 5, which lists the ten most serious combinations of flaws.

TABLE 4 Ten Criteria Most Frequently Rated Essential

	Percent
Capable of sustained intense effort	64% — How determined
Thoroughly familiar with market	62%
At least ten times return in 5–10 years	50%
Demonstrated leadership in past	50%
Evaluates and reacts to risk well	48%
Investment can be made liquid	44%
Significant market growth	43%
Track record relevant to venture	37%
Articulates venture well	31%
Proprietary protection	29%

TABLE 5 Percentage of Venture Capitalists Who Would Reject Proposals Which Fail on Two Criteria

Pairs of criteria	Percentage who reject the proposal
1. Capable of effort Return of ten times within 5–10 years	84%
2. Capable of effort Functionally balanced management team	80%
3. Demonstrated leadership Familiar with target market	80%
4. Capable of effort Demonstrated leadership	79%
5. Able to evaluate risk Familiar with target market	77%
6. Capable of effort Track record relevant to venture	77%
7. Able to evaluate risk Return of ten times within 5–10 years	76%
8. Capable of effort Significant growth rate of market	76%
9. Demonstrated leadership Return of ten times within 5–10 years	75%
10. Capable of effort Proprietary product	75%

The results of Table 5 can be interpreted in the following way. Take item one on the list. If a new business were proposed in which the entrepreneurs appeared to have little staying power and the business did not at least show the potential for delivering a return of 10 times within 10 years, then 84% of all venture capitalists in the sample (a sample that is highly representative of the whole venture capital community) would reject the proposal, however redeeming its other features may be. Such a proposal would be critically flawed, in that it would get an "audience" with only 15% of the venture capital community, who would then still assess it for further flaws. So its chances of being funded at all would be miniscule unless the proposers of the venture could find some way of identifying and compensating for these critical flaws.

In every case in Table 5 the critically flawed ventures had at least one criterion that concerned the entrepreneur's personality or experience. So entrepreneurs seeking funding

TABLE 6 Required Venture Team Composition

	Percent responses
One person with relevant experience essential	20%
Team with similar experience essential	9%
Balanced team essential	42%
None essential	28%

who have any of these personality or experience flaws must realize that they are wasting their time unless they can assemble around them a team of people who can compensate for these flaws.

Table 6 reinforces this point—it shows that just under one-half of venture capitalists will not even consider a venture that does not have a balanced team for the venture. Once again, the venture would be rejected irrespective of how glamorous the industry was or exciting the proposed product was.

FACTOR ANALYSIS

In order to explore whether there was a more general pattern underlying the venture capitalists' responses, the data were factor analyzed. Because many of the criteria were not considered to be important by respondents, only those factors that had a mean score significantly greater than 2.0 were included in the factor analysis. This means that all criteria with a mean score of less than 2.8 were excluded ($t = 1.98$, $P < 0.05$). The results of the factor analysis are reported in Table 7.

In attempting to explain these factors, we fell back on a concept elaborated by Driscoll (1974) who suggested that the role of the venture capitalist goes beyond the mere provision of funds to the venture. He contended that the real challenge to the venture capitalist lies

TABLE 7 Rotated Orthogonal Factor Analysis for Evaluation Criteria

	Factor					
	1	2	3	4	5	6
Little threat of competition	80	16	−9	−11	2	9
Product stimulates existing market	67	8	30	28	7	−7
Proprietary product	56	6	−2	−7	0	49
Investment liquid	5	78	8	−8	−22	6
Venture capitalist familiar with industry	19	67	−6	−9	28	−12
Attends to detail	5	−19	67	5	22	−4
Relevant track record	−15	7	60	0	6	51
Significant growth rate	29	43	59	15	−35	−5
Return > 10 times in 10 years	2	31	48	−21	−7	14
Capable of intense effort	−11	25	−16	78	−6	15
Evaluates and reacts to risk well	2	−20	21	66	6	−19
Familiar with markets	38	−4	0	50	6	21
Functioning prototype	23	4	10	−8	71	−9
Demonstrated mkt. acceptance	−4	−24	−9	−3	60	26
Articulate in discussing venture	−19	22	22	30	57	9
Demonstrated leadership	14	−6	5	9	8	80
Variance explained	1.82	1.66	1.65	1.60	1.53	1.38
Percent variance explained	16.7%	10.4%	9.8%	8.8%	7.8%	6.7%

in managing the risks of the venture. This theme of "managing the risk" is what seems to draw together the evaluation criteria that were loaded onto each factor.

Factor 1 is associated with a concern with *competitive risk*. A venture with a proprietary product that has little threat of competition within 3 years and an existing market is clearly competitively insulated.

Factor 2 reflects a concern with managing *bail out risk*. Venture capitalists who are thoroughly familiar with the industry and have a highly liquid investment in that industry will be confident that they will know when to bail out and be able to do so if necessary.

Factor 3 represents a concern with *investment risk*. Ventures run by meticulous entrepreneurs, with sound track records, in high growth markets, and the prospect of 10 times payback in 5–10 years are relatively insulated from the threat of total loss of the investment.

Factor 4 relates to *management risk*. The venture capitalist who backs a venture where the entrepreneur is capable of intense sustained effort, knows the market thoroughly, and reacts well to risk will be relatively comfortable that the venture will not be mismanaged.

Factor 5 taps *implementation risk*. Ventures in which the entrepreneurs have a clear idea of what they are doing, who have already developed a functioning prototype, and which product has a demonstrated market acceptance are more cushioned from product and market development failures.

Factor 6 reflects a concern with *leadership risk*. It stands apart from other characteristics of the entrepreneur, such as staying power, experience, ability to evaluate risk, and so on, and addresses the issue of whether the entrepreneur is also able to lead others. If the entrepreneurs cannot do this, then despite their other positive characteritics the venture could still fail. Unfortunately, this is a single item factor. Future research could include more items that tap leadership qualities.

Tyebjee and Bruno (1981) independently developed a questionnaire with the six factors that they identified have a number of areas of high correspondence. First they found a factor that they called uncontrollable risk, which paralleled our competitive risk. Second, their cash out factor paralleled our bail out risk. Next, their quality of management factor was associated with the management risk that appeared in our study; their viability factor approximated the implementation risk that our analysis identified; and their market factor correlates with the investment risk we found.

The major shift that has occurred since Tyebjee and Bruno's study is that venture capitalists in the mid-1980s have reduced their expectation of specific skills (marketing, technical, and so on) on the part of the entrepreneur and shifted these expectations to the venture team.

From the above discussion, the factors that were identified seem to tap all the major risks associated with new ventures. To the extent that the venture capitalists can screen ventures and accept those that have some insulation from each of the above risks, they will have done everything possible to manage the risk of the ventures in which they do invest.

CLUSTER ANALYSIS

The last area of interest is whether there are any broad types of venture capitalists, with common approaches to the overall evaluation of venture proposals. To determine this, we carried out a cluster analysis of all criteria that had a mean value significantly greater than 2.0. The cluster analysis for which the cubic clustering criterion appeared to have a change in slope was not distinct, but occurred between the 3 and 4 cluster solution. In the interest of parsimony, we selected the 3 cluster solution. The results are presented in Table 8.

TABLE 8 Cluster Analysis: Results for Three Cluster Solution

	Cluster 1—purposeful risk managers	Cluster 2—determined ecletics	Cluster 3—parachutists
Entrepreneur's Personality			
Evaluates risk well	−0.99	0.53	0.28
Capable of sustained effort	−0.55	−0.57	1.82*
Articulate in discussing venture	1.04	−2.25**	1.03
Attends to detail	2.46**	−0.08	−2.56**
Entrepreneur's Experience			
Relevant Track Record	0.39	0.38	−0.81
Demonstrated leadership ability	2.58**	−1.06	−1.52
Familiar with market	0.80	0.44	−1.25
Characteristics of Product/Service			
Product protectable	3.86***	−1.93*	−2.32**
Product has market acceptance	2.10**	0.98	−1.68
Prototype developed	3.14***	3.39***	−1.13
Market Characteristics			
Product stimulates existing market	2.69**	0.19	−2.70***
Market has high growth rate	1.59	−1.81*	0.22
Low threat of early competition	3.39***	−2.14**	−2.23**
Venture capitalist familiar	2.08*	−4.65***	1.75*
Financial Considerations			
Ten times investment in ten years	1.33	−0.52	−0.72
Highly liquid investment	1.50	−3.35***	6.49***
Sample size	41	32	27

*$P < 0.1$.
**$P < 0.05$.
***$P < 0.01$.

The first cluster, which represents about 40% of the venture capitalists in the sample, was representative of a group of venture capitalists we called "Purposeful Risk Managers." This group of venture capitalists is inclined to expect several attributes in the venture that assure that the various risks that were identified in the factor analysis are well managed. This group seeks the following: entrepreneurs with demonstrated leadership skills and a product and market with characteristics that clearly reduce the risk to manageable levels. They prefer protectable products, for which a prototype has been developed; there is clear market acceptance in an existing market with which the venture capitalist is familiar and in which the threat of early competition is low. Whereas few ventures will have all of these characteristics, the venture capitalists in this group seek ventures that are high on as many of these as possible—the idea being to manage down the inherent uncertainty of venturing by seeking such risk managing characteristics at the very start of the venture.

The second group of venture capitalists is totally different, so much so that they have been dubbed "Determined Eclectics," because they appear to deliberately impose an absolute minimum number of restrictions on what ventures they will be prepared to consider. Thus they rate most criteria low compared to the purposeful risk managers. This is not a surprising result. A substantial number of venture capitalists take pride in being open to all types of venture proposals and in being prepared to consider any deal. Whether the openness to review deals is translated in equally broad based investment behavior is another issue. They comprised a solid 33% of all the venture capitalists in our sample.

Finally, there is a group of about 25% of the venture capitalists whom we call "Parachutists." They are perfectly willing to support most ventures as long as they feel that they have a high liquidity "parachute" via which to escape with if things go wrong. In fact, they appear to feel that as long as they have an entrepreneur who has staying power, a venture in an industry with which they the venture capitalists are familiar, and a highly liquid investment, they can commit to any such venture, secure in the knowledge that they will be able to spot problems and bail out if necessary.

CONCLUSIONS

Perhaps the most important finding from the study is direct confirmation of the frequently iterated position taken by the venture capital community that above all it is the quality of the entrepreneur that ultimately determines the funding decision. In Table 1, five of the top ten most important criteria had to do with the entrepreneur's experience or personality. In Table 5, every pair of criteria included at least one that concerned the entrepreneur. There is no question that irrespective of the horse (product), horse race (market), or odds (financial criteria) it is the jockey (entrepreneur) who fundamentally determines whether the venture capitalist will place a bet at all.

The question is if this is the case, then why is so much emphasis placed on the business plan? In a business plan there is generally little to indicate the characteristics of the entrepreneur—it is generally devoted to a detailed discussion of the product/service, the market, and the competition. Such content is necessary, but not sufficient. The business plan should also show as clearly as possible that the "jockey is fit to ride"—namely, indicate by whatever feasible and credible means possible that the entrepreneur has staying power, has a track record, can react to risk well, and has familiarity with the target market. Failing this, he or she needs to be able to pull together a team that has such characteristics, and show that he or she is capable of leading that team.

This study benefitted greatly from the suggestions of Prof. Susan Jackson who advised us on the development of the questionnaire.

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PRE-START ANALYSIS
A FRAMEWORK FOR THINKING ABOUT BUSINESS VENTURES

One of the most important activities in the start of a new business venture should take place in advance of any major commitment of resources and to action. This activity is often called "pre-start" analysis. It can be thought of as gauging the depth of the water before taking the plunge. It is the most private thought process that should take place in the mind(s) of the entrepreneur and his/her management team.

There should be three dominant goals for this process:

1. To identify the right course of action.
2. To understand the magnitude of the task.
3. To identify the risks that will be assumed and to determine how they can best be managed or mitigated.

A typical work product of the pre-start phase is a business plan. A business plan, however, can be thought of as a written summary of the state of one's thinking about a business situation as of a certain moment in time.

While the content, presentation and format of a business plan are important, it is the quality of the basic thought and assumptions behind the business plan that are often the keys to the effectiveness of the presentation and its usefulness both in setting forth the plan of action and for communicating it to others.

Furthermore, a business plan can rarely be written section by section without simultaneous consideration of several major topics, which do not fit neatly into any one part of the plan. There are also certain concepts and assumptions that are explicitly or implicitly contained in every business plan and which influence the overall presentation.

In actual practice, there are also many circumstances in which business initiatives must be started without the time or resources to prepare a formal business plan. In these cases, it is even more essential

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that there be a master concept in the mind of the entrepreneur and his/her management team to guide actions and the commitment of resources to the venture.

In planning and starting a new venture, it is most useful to think about those areas that are fundamental to the process by which value is to be created and realized regardless of how or even if they are presented in a business plan.

These should include checking our perceptions and understanding of at least the following:

Area	The Considerations
1	The nature of the opportunity to be pursued.
2	The critical skills, resources, relationships and approvals that will be required.
3	The indicated plan of action.
4	The plan for putting together a business entity to incorporate or control the required skills and resources.
5	The concept and plan for actually controlling the venture over time.
6	The strategy for harvesting the benefits of the effort.

As these areas suggest, the goal of pre-start analysis and planning is to try to look across the entire business venture, starting with an understanding of the perceived opportunity and including the process by which value will be created and realized by harvesting. The remainder of this note will look at each of these areas in more detail, and, in the process, suggest some questions to act as a starting point for pre-start analysis of new business ventures.

As a practical matter it is clear that predicting the future is at best an imprecise science, and that there is almost always a steep learning curve in any entrepreneurial activity. However, systematic thinking can improve the quality of business plans and actions in the absence of a plan. It can also result in a sharper focus to the concept of a venture, to strategic actions and to the logic behind early commitments of resources to the venture.

AREA 1

Understanding the Opportunity

The pursuit of a well-defined opportunity is the driving force behind all well-conceived ventures. The perception of that opportunity serves to define the remainder of the venture. This being the case, we might ask ourselves:

A. What is the expected economic life of the opportunity and what should be the time span for the analysis?

Every opportunity exists only for some finite amount of time, which varies greatly depending upon the nature of the business. For example, in the popular music business, the opportunity for a new hit tune is usually only a few months. By contrast, in real estate, opportunities for even a single property may span several decades. It is important to understand (1) the time period and the economic life over which the opportunity will exist, and (2) the appropriate time span for our own analysis of the opportunity. These are not always the same.

The value of an opportunity also changes. Certain parts of the economic life of the opportunity may have greater potential than others, and a careful analysis of the timing and magnitude of opportunities for harvesting can often indicate certain time limits to our analysis and plans. Looking again at real estate, for example, the syndication of tax shelters typically exploits only part of the total economic opportunity and over only a fraction of the total economic life of an income-producing property. Thus, it may be advantageous to pursue the underlying opportunity for only part of its total existence.

The entrepreneur must identify the best period over which to pursue all or part of an opportunity, and match his/her concept of how value can be created with a strict self-analysis as to the entrepreneur's own goals, skills and time-frame.

B. Is the profit potential adequate to provide a satisfactory return on investment of:

- Capital
- Time
- Risk
- Forgone Alternatives and Opportunity Costs

An opportunity must simply earn an adequate return to justify taking an entrepreneurial risk. "Adequate" is a relative term and depends on the amount of capital invested, the time-frame to earn the return, the risks assumed in the process and existing alternatives for using both capital and time elsewhere.

Opportunities that require lots of capital, long periods of time and have substantial risks usually make little sense for an entrepreneur, unless an enormous residual value and carried interest is being created. In all too many cases, such opportunities may create considerable value, but not for the original risk takers. The numerous rounds of financing reduce the founders' percentage of ownership to such an extent that ultimately there is little recompense for the risk taken.

"Adequate" also depends on our alternatives and opportunity costs, which vary with individuals, time and circumstances. What may be attractive and viable for one person may be unrealistic for another owing only to the presence of more attractive alternatives.

This wide variation often becomes quite clear when young entrepreneurs attempt to raise financing from certain kinds of potential investors, particularly older persons or institutions, for example, with needs for steady returns.

Some of the better opportunities have the following financial characteristics:

- Affordable levels of capital requirements that can be met with a combination of equity and debt financing;
- Financial and ownership structures that are susceptible to "residual pricing" techniques for allocating returns to the financial participants;
- Steady and rapid growth in sales during the first 5 to 7 years in some well-defined niche in the market;
- High profit margins:

Gross Margin	40 percent or more
After-Tax Profits	15 percent or more

  (Or, in the absence of such margins, some clearly defined and understood franchise on volume and high internal turnover of assets on the balance sheet);
- High potential for operating leverage with increased experience and scale of operations;
- Internally generated funds to finance and sustain growth;
- Capacity and options for using debt and other financial leverage supported by:

1. Buildup of valuable assets that can be used as collateral;

2. Earning power and cash flow to cover debt service;

- Relatively short time frames during which major value can be created and sustained--usually from 3 to 5 years;

- Real harvest options to turn equity into after-tax cash or equivalents; and

- Rate of return or investment after taxes of 40 percent or more.

C. Does the opportunity open up additional options for:

- Expansion (operating leverage, multiples, and financial leverage)
- Diversification
- Integration

1. Based on Resource Development, Technological (future opportunities)

2. Change or Market Development (favorable environment)

Good opportunities are ones that create additional options in a variety of different ways. Since the future is often unknown, it is critical for the entrepreneur not to be locked into a single ballistic course. Good opportunities allow for mid-course corrections.

Poorer opportunities foreclose or limit future options. Opportunities that consume resources, eliminate alliances, narrow technological options are less preferred than those which maintain flexibility.

D. Will the profit stream be durable in the face of:

- Imitative Competitors
- Product Substitutions
- Changing Technology
- Changing Customer Preferences
- Personnel Turnover
- Changing Relationships with both Suppliers and Buyers

One thing is certain: things will change over time, particularly if we are successful. It is absolutely essential, therefore, to evaluate whether, once we are committed to the venture, we may become vulnerable to an erosion and decay of our profit stream on which everything may depend. This means identifying and combatting potentially fatal vulnerabilities, and recognizing that some are internal to the venture, such as personnel turnover, while others, such as competitive reactions, are external factors.

E. What barriers to entry can be created for later participants based on:

- Cost
- Distribution Power
- Patents or Trade Secrecy
- Product Differentiation
- Focus

There is no point in going into business unless we can stay there safely, survive and prosper.

Given a good idea, some real advantage and success, our venture will, in fact, have only a lead time. Competition will emerge. Frequently, the first competitors will enter the market with a "copy and cut" strategy for their products and pricing. Thus, we must anticipate competitive threats, and devise legitimate measures to protect our lead time and our competitive advantage from encroachment over time. An often fatal error for the new and emerging firm is the failure to plan for expected competitive reaction and therefore to plan adequately for the renewal which must occur in order to assure that the advantages sought will be durable.

F. Are the customers readily identifiable and reachable; are they susceptible to innovation; can they afford to innovate in terms of their investment in:

- Dollars
- People
- Procedures
- Facilities and Equipment

Often a new venture's success depends upon the ability to sell some sort of change to the customer: a new process, product or service. In effect, the customer will be asked to do or offer something different in order to do business with us. Typically, this requires some form of new investment or expenditures by the customer, and involves changing the way he/she does business. Re-training is usually considered to be an investment or expenditure by a customer. Becoming integrated into the customer's procedures is often the most effective barrier to entry of competition; it is, however, often the major hurdle which a new product or process must overcome.

It is essential, therefore, that the change being sold be affordable to the customer and yield a clearly visible benefit. Assuming customers elect to buy our products and services, we must be able to satisfy and reward them with real benefits at prices and terms the customer can accept and is willing to pay.

It is particularly useful to identify specific groups of potential customers within markets and to compare the real benefits received with the products and services offered. Specificity as to the particular customer is an absolute prerequisite to the effective planning of distribution approaches. Those opportunities which postulate the existence of a generalized market are almost always less successful than those based upon the knowledge of specific customers and the means by which to reach them.

G. Does the product or service meet a real need?

- Functionality
- Price
- Distribution
- Durability
- Perceived Quality

This concept is fundamental to any new venture. Except in pure trading or promotion activities, the creation of real value ultimately depends on our ability to offer products and services that satisfy some real need among the customers.

A new venture must convince potential customers of the need and the benefits of its products and services in a reasonable period of time and at an affordable marketing and selling cost.

Common serious mistakes that entrepreneurs make are (a) to fail to understand how or even if their products and services will meet a customer's real needs and (b) to underestimate how much time and marketing costs will be required to achieve a major volume level, particularly "national distribution."

H. Will the suppliers control critical resources and capture the innovative rents or profits?

As a result of "make or buy" analyses and the desire to be "lean and mean," new companies frequently elect for some period of time not to invest in certain facilities or technology on which their venture will depend.

In such cases, they will become variously dependent on suppliers, who may be in a position to squeeze extra profits from or infuse higher risk into the venture because they control critical resources.

I. Will the buyers be so strong as to demand uneconomic concessions?

This area is a potential minefield particularly in established markets.

It is often the case when a new or small business attempts to break into a market or sell products or services to large corporations, that the buyers enjoy such great advantages in purchasing (e.g. terms of delivery, price, credit, quality standards, etc.) that they wring concessions from the smaller business rendering the transactions uneconomic or excessively risky.

AREA 2

Critical Skills, Resources, Relationships, and Approvals

An entrepreneur can be viewed as a person who finds ways to bridge the gap between what he/she has in the way of skills and resources and what is actually needed to pursue the opportunity.

Those who already have the skills and resources under personal control are more properly "investors" rather than entrepreneurs. Much entrepreneurial failure occurs because there is too great a mismatch between the resources controlled by the entrepreneur and those required to pursue the opportunity successfully.

Every venture depends on having the ability to control a minimum set of critical skills, resources and relationships, and to gain, as necessary, any required approvals.

The major question is: What is the minimum resource set required, and how can we get and maintain control over these?

In answering this question, it is useful to ask several much more specific questions that test our ability to assemble this minimum package.

A. What do I bring to the opportunity? Which of the skills, resources, and relationships does the entrepreneurial group currently possess?

The creation of real and lasting value depends on our ability to bring something new to the table. The less we bring, the more fragile and vulnerable we will be. The more we bring that can be protected and sustained, the more unique and potentially durable will be the venture.

Rarely does an individual entrepreneur possess or even substantially control all of the skills, resources and relationships that are required to pursue an opportunity over the longer term. It is important to assess and understand what skills, resources and relationships are truly controlled by the venture and to understand the resulting advantages and vulnerabilities.

B. Who are the likely suppliers of the remainder of the resources:

- Financial
- Marketing and Sales
- Technological
- Production
- Product Development
- Personnel
- Managerial
- Systems

Whatever we lack but need, we have to come up with. The key to bridging the gap is to understand from where and how the needed resources can be obtained. Often one of the most difficult parts of the problem is simply identifying and understanding alternative sources of supply.

The "resourcefulness" of many entrepreneurs often shows most clearly in this area, particularly their ability to "make do." The ability to find ingenious ways to get hold of and use, not necessarily own but use, needed resources is a survival skill. In-depth knowledge of an industry and a market is particularly useful in meeting this challenge. The entrepreneur can calibrate quality, honesty, cost and risk through personal experience and knowledge.

Personal experience also improves credibility and increases the desire of potential suppliers of resources to participate. Suppliers prefer investing their own risk capital of time and product in a known quantity with whom they have personal experience or at least personal ability to calibrate knowledge and planning.

C. What is really unique about the proposed approach to the opportunity:

- Cost Structure
- Technology
- Product Features or Quality, Including Augmented Product Definitions
- Marketing and Sales Channels
- Financial Resources
- Focus
- People

It is absolutely essential to have a strategy in mind and a clear understanding of the venture's competitive basis, both in the short run and over time. Unless the venturer controls the truly unique features in the approach, there is high vulnerability. Suppliers, customers or innovative competitors can exploit this vulnerability to the long-term disadvantage of the venture.

D. What skills and resources must be a part of the internal organization:

- Can critical economies of scale be achieved?

  The best companies include and control, as part of their internal organization, those elements and resources that yield distinctive competitive advantages as their experience level and scale of operations increase.

- Can competitors be preempted from controlling critical resources?

  This is a particularly important strategic question for small companies seeking to compete against larger established players, who may offer similar products or services. Human resources are often the major ones which can be preempted by start-up ventures. To accomplish this, however, careful attention must be paid early to the venture's legal and economic structure.

- Which resources require continued coordination through direct authority relationships?

  Some resources can be managed through contractual relationships which are essentially self-enforcing, e.g., suppliers making product to specification. Creation of good alternative possibilities results in achievable price, quality and delivery standards without direct authority over these items.

  In other cases, direct contractual or other authoritative relationships must be established, an example being the creation of a new marketing organization. The feedback needs, the ambiguity of the task, and the requirements for noneconomic action such as missionary selling are often precursors to the need for direct authority-based control. In later stages as the marketing process becomes more routine and systematic, expansion can often be achieved without expanding employment.

E. What quality trade-offs can be made among the required skills and resources?

It is rarely necessary to have a uniform level of quality in every required resource. An important insight is understanding quality trade-offs. Many fine businesses have been built based upon the utilization of used equipment. Management valued quality more highly in the output rather than in the appearance of the manufacturing floor.

F. What are the major requirements for regulatory compliance:

- Licenses
- Operating Procedures
- Product Approvals and Testing
- Insurance and Bonding

It is a telling mark of inexperience and naivete to assume that we can pursue our plans without ensuring that our venture will be in full compliance with the extensive sets of laws, regulations and standards of business practice in certain industries and situations. Reality is that we live in an extremely complex domestic and international environment of laws, regulations and business practices. It is frequently necessary to obtain formal approval, licenses or other sanctions in order to simply conduct our activities.

Some of the required sanctions and approvals can be obtained by complying with known laws and/or by compliance with regulations issued by federal, state and local government agencies. Other sanctions and approvals, such as Underwriters' Laboratory approval of the safety of certain kinds of consumer and industrial products, must be obtained from public and private organizations, which have lengthy and frequently expensive application, testing and approval processes. Still, in other cases, such as in commercial building construction or many government and large private sector contracts, the standard business practice may require formal and legally enforceable bonding of supplier and/or contractor performance by insurance companies, etc.

AREA 3

The Development of an Action Plan

With the opportunity in mind and a clear understanding of the required skills, resources and approvals, it is possible to evaluate one or more alternative plans of action.

A frequently useful place to start is to examine what might be done with different levels of resources.

A. For each resource, skill, and approval required:

- What is the Minimum Level Necessary for Operation?
- What is the Optimal Level for Smooth Operation?

A bare-bones plan usually has lower costs but higher levels of operating risk. On the other hand, comfort usually means higher cost, but not necessarily lower operating risk.

Somewhere in the middle, there is usually a calculated level of risk that we are willing to assume. Often an entrepreneur believes his/her particular skills, knowledge or experience allows risk to be managed differently than conventional wisdom might dictate. The entrepreneur therefore is prepared to assume a risk which others believe to be unwise, but which, in fact, he/she believes there is minimal downside.

The keys are to understand what is needed for the venture, what causes increased risks and to devise an effective strategy to mitigate those risks assumed. The assumption that more resources provide less risk is clearly incorrect. The entrepreneur must know how and why that statement is incorrect.

B. What are the checkpoints to mark passage among the expected stages of the venture:

- Idea
- Venture Financing
- Start-up
- Critical Mass Growth Points
- Organizational Maturation
- Preparation for Harvesting

One of the true hallmarks of an effective and successful entrepreneur as a manager is that he/she almost never willingly commits resources to a venture without having checkpoints and the ability to change course quickly as developments warrant.

C. What cash flow will be required to pass each point?

It seems like an obvious error, but frequently private aviation pilots ignore the importance of estimating expected fuel consumption and alternative routes when taking off on cross-country flights.

For an entrepreneur, fuel means cash.

D. Are the economics sufficiently clear to develop variable budgets for all functions?

It is frequently useful to craft detailed budgets to plan for and control the use of resources. When reasonable budgets cannot be estimated, it usually indicates a lack of understanding of the function to be performed or exactly how resources are consumed over time.

The notion that "fixed costs aren't and variable costs don't" is a truism which has great currency in start-up ventures. The entrepreneur will benefit greatly by coming to grips with these phenomena early in the venture.

E. What critical checkpoints will mark the lowering of risks?

Major long-term objectives are most relevant and useful when they can be broken down into achievable intermediate milestones.

As a venture develops, it typically becomes more viable. Many entrepreneurs frequently think in terms of "plateaus" and "If only we could...". Preplanning of these checkpoints and plateaus helps us understand how the risk of a venture can or will be reduced over time. These same plateaus act as useful benchmarks in the acquisition of additional resources. They mark times when new players can be induced to play, new types of financing become available, or new suppliers and subcontractors enter the picture based upon risk stages having been passed. The entrepreneur who is conscious of passing these checkpoints and bases his/her strategy on passing plateaus can often maintain a higher percentage of ownership.

F. Do I have adequate resources to surmount potential variations from the plan?

Things will go wrong and at the worst possible time.

There is an old rule of thumb in business that new ventures can have variances of 3" and 2": three times as much time and twice as much money, or vice versa.

In times of financial distress the "golden rule" takes effect--the party with the gold (i.e. cash) rules. The refinancing of a venture in times of financial distress is most often done on a confiscatory basis. In the venture capital industry, this is called a "down and dirty" financing.

The strain and bargaining disadvantage for an entrepreneur created by a major financial crisis provides a rare predatory opportunity for those with cash to exact excessive concessions from those with money already trapped in the deal. Rarely does new money coming into a deal ever agree to take (bail) old money out. The rule is last-in-first-out. To make matters worse, new money frequently demands not only that old money stay in the deal, but also that it retreat in terms of legal priority, control over the affairs of the venture and any future opportunities to exit.

With this in mind, a plan without contingencies and reserves is no plan at all. The knowledgeable investor, supplier, customer and employee will want to know what will be done and how it will affect their own expectations and rewards from the venture.

Obviously, however, it is not feasible to have enough resources available up front to surmount every potential contingency. On the other hand, the plan must deal with the likely ones and the entrepreneur must have a back-up vision of the future which will allow survival in the face of potential misfortunes.

AREA 4

Putting Together the Business Entity to Incorporate or Control the Required Skills and Resources

It is always necessary to structure some kind of legal vehicle and organization for conducting the affairs of the venture and for controlling the skills and resources that must be assembled.

This typically involves evaluating a number of trade-offs and possible approaches, which ultimately become manifest in the actual organization of the business, its legal identity and a series of deals and contracts that are put in place to form the venture.

A. For each critical skill or resource what alternative mechanisms are available for control:

- Acquisition for Direct Control
- Contractual Agreement
- Long-Term Noncontractual Supply Arrangements
- Ad Hoc Need Fulfillment

This is where concepts for gaining control of resources begin to come down to practical realities.

For each major resource, there may be different ways to acquire and control what we need. In some instances, we may require ownership; for others, long-term contracts may suffice; still for others, loose relationships may satisfy our needs.

B. What is the most specific definition of the critical needs for the venture?

Leading to success:

Attempt to write the *Fortune* article describing the key success factors which have caused the firm to be recognized as a leader 20 years after its founding. Such an exercise would have to consider personnel, market, competition and environment among other things.

Leading to failure:

Attempt to write the *Forbes* article showing the company's spectacular rise and fall. Such an article might include the major risks, the critical assumptions which seem *a priori* to be most likely in error, the key sensitivities and anything which might be a potential major oversight.

C. What are the critical agenda items for the possessor of the resources and skills:

- Financial Reward
- Professional Advancement
- Operating Integration
- Risk Avoidance
- Social Status
- Political Response to Outside Constituency

These factors frequently provide the foundation pieces for deals. One of the keys to unlocking someone else's resources on favorable terms is to know what the other person or organization values most. Frequently, there are complex factors at work that have little to do with money.

D. Can incentives be structured to meet the agenda items above?

It is difficult to establish and maintain meaningful control over any resource without providing incentives for the owner/possessor of the resource to cooperate with you.

"Thin" relationships and deals can be dangerous and unreliable over time. In cases where incentives are inadequate, it is often wise to enhance them to motivate others to work actively on your behalf. This keeps parties in the deal for positive reasons, but typically requires some kind of concession on the entrepreneur's part.

E. What are the downside risks and consequences for:

- Failure to Obtain the Skill or Resource
- Having Inadequate Quantities of the Skill or Resource
- Later Defection of Key People, Customers, or Suppliers
- Marginal Performance

The differing kinds of failure listed have clearly differing consequences. The key is to identify those kinds of failure which can have fatal or near-fatal consequences and then shore up the organization against those specific problems.

F. Will the opportunity provide enough return to meet the resource providers' needs and to provide the entrepreneurial reward?

New business ventures are always bounded in many ways and can support only so many players. However, there are many different types of "returns" in any venture, including noncash returns such as enhanced technical position, prestige, franchises on market segments, etc.

Skilled entrepreneurs know how to allocate all the important financial and other returns among the key players. The problem comes when the returns are just not sufficient to meet the expectations of the key players. These are known as "thin deals."

AREA 5

Controlling the Venture

It makes little or no sense to start a venture that cannot be controlled and directed over time.

Prior to the actual start, it is useful to consider how we expect to manage the venture.

A. Does my management concept include both the critical internal and external elements of my organization?

Somehow, we must devise and apply a formal or informal system of management to the venture. This management system must include within its scope both what is going to be internal to our venture (e.g. our people, production processes, etc.) and what we have decided to keep outside of the venture's organization (e.g., key suppliers or distributors with whom we may have contracts and agreements).

Often the entrepreneurial venture is distinguished by the control which it exerts over resources which it does not legally own or employ. The control and influence can only be intelligently and purposefully exercised if there is a managerial relationship with those resources. The relationship is neither hierarchical nor is it a pure market transaction. It provides elements of continuity, clear mechanisms for informational feedback and must also be mutually satisfying.

B. Do I have adequate mechanisms to monitor and evaluate performance of the internal skills and external resources?

This implies not only bookkeeping but also must take into account all the information necessary to provide an accurate and timely means of measuring the performance of every essential part of the venture.

C. How will I become aware of the changes which shift the answers to the questions and concepts in areas 1, 2, 3, and 4 above?

The entire venture will be based on answers, assumptions and concepts that have been addressed in previous areas, and it is essential that a way be devised to acknowledge changes that take place in any of these critical areas.

D. Am I able to measure performance over appropriate time frames?

Timing and responsiveness are essential in new ventures. Thus, the management system must be capable of not only delivering information regarding the business' performance, but do it in time to make a difference.

A key is to understand and be constantly aware of the essential time frames for decisive actions or decisions and to be flexible and responsive to changing circumstances.

AREA 6

Understanding How to Harvest the Benefits

Harvesting value that has been created over a reasonable period of time should be the main goal of the venture.

The most demanding harvest objective is to maximize the conversion of the value that has been created in the venture into free and clear cash after taxes.

A. Do I have a specific mechanism(s) for harvesting?

Not all ventures have the same alternatives for harvesting; some cannot be harvested at all and must simply be operated for cash. Often personal service businesses fall into this category. On the other hand, businesses which create assets are often harvestable even without the owner having to quit active business life.

Business ventures that have no realistic prospects for a harvest represent mainly investments that have been made in providing a job for oneself, one's partners and employees. However, for those business ventures that can be harvested, it is important to understand the range of real options that the venture may have. These include:

1. Acquisition by a larger company
2. Public offering

IPO	Typically new shares are issued by the company and sold to raise more financing and establish the market value of the stock.
Secondary	Shares of principals and early investors are sold to the public or new investors (may be part of IPO).

3. Sale of the company:

   - To a third party
   - To the management and employees

4. Liquidation and distribution of proceeds

Of these mechanisms, acquisitions, mergers and public offerings are most frequently used in venture capital situations. However, timing and market conditions are critical to the harvest.

Public offerings are often the most elusive harvest form for entrepreneurs. On becoming paper millionaires, many founders find themselves the last to realize the after-tax cash gains from public offerings.

Acquisitions and mergers have also often provided only illusionary harvesting mechanisms. The entrepreneur who substitutes his/her own undiversified holdings for undiversified holdings in another firm often loses both control and wealth.

It is critical to understand both the goals and the detailed mechanisms by which a harvesting strategy is to be executed.

B. Have I structured the venture financially and legally so as to maximize the after-tax yield from harvest?

Here is where the devil is in the details and where foresight is essential. The IRS has been aggressive as taxpayers have been creative in pursuing after tax dollars.

Substantial and frequently extensive legal and tax-related preplanning is always required. Some issues have significant lead times extending over several years. For example, achieving capital gains treatment of a partial liquidation and discontinuance of a line of business, requires of a corporate vehicle that certain conditions be met for periods prior to and after the liquidation transaction.

C. What conditions will trigger a harvest?

Timing is everything.

There may indeed be many factors that will determine when it is time to cash in. These could include:

- Need for large amounts of capital to press on to a major stage of growth
- Peaking of profit potential
- Changes in tax laws

- Changes in debt or public equity markets
- Economic cycles
- Age, health and interests of principals and founders

D. What conditions could preclude a harvest?

Depending upon the nature of the venture, from time to time certain factors may work against harvesting or prevent it altogether. Among the more important external factors are:

- Economic and market cycles
- Tax law changes
- Competitors
- Changes in laws and regulations

Among the more important internal factors are:

- Major management or operating problems
- Loss of trade secrets

E. How will my responsibilities to other participants be acquitted at harvest?

All of your creditors, investors, partners and key employees have or develop expectations about what they will gain from the venture. If you ever intend to do business with them again after the harvest transaction, you will want to ensure that they come away from the experience reasonably happy.

SUMMARY

Starting a new venture is obviously a complex activity, more so in some cases than others. It entails foresight into all of the issues required to manage and to eventually harvest the venture.

The questions posed in this note are not simple. In some sense the knowledge required to answer them positively may be daunting to the aspiring entrepreneur. On the other hand, the consequences of not having thought about the questions in advance are even more severe.

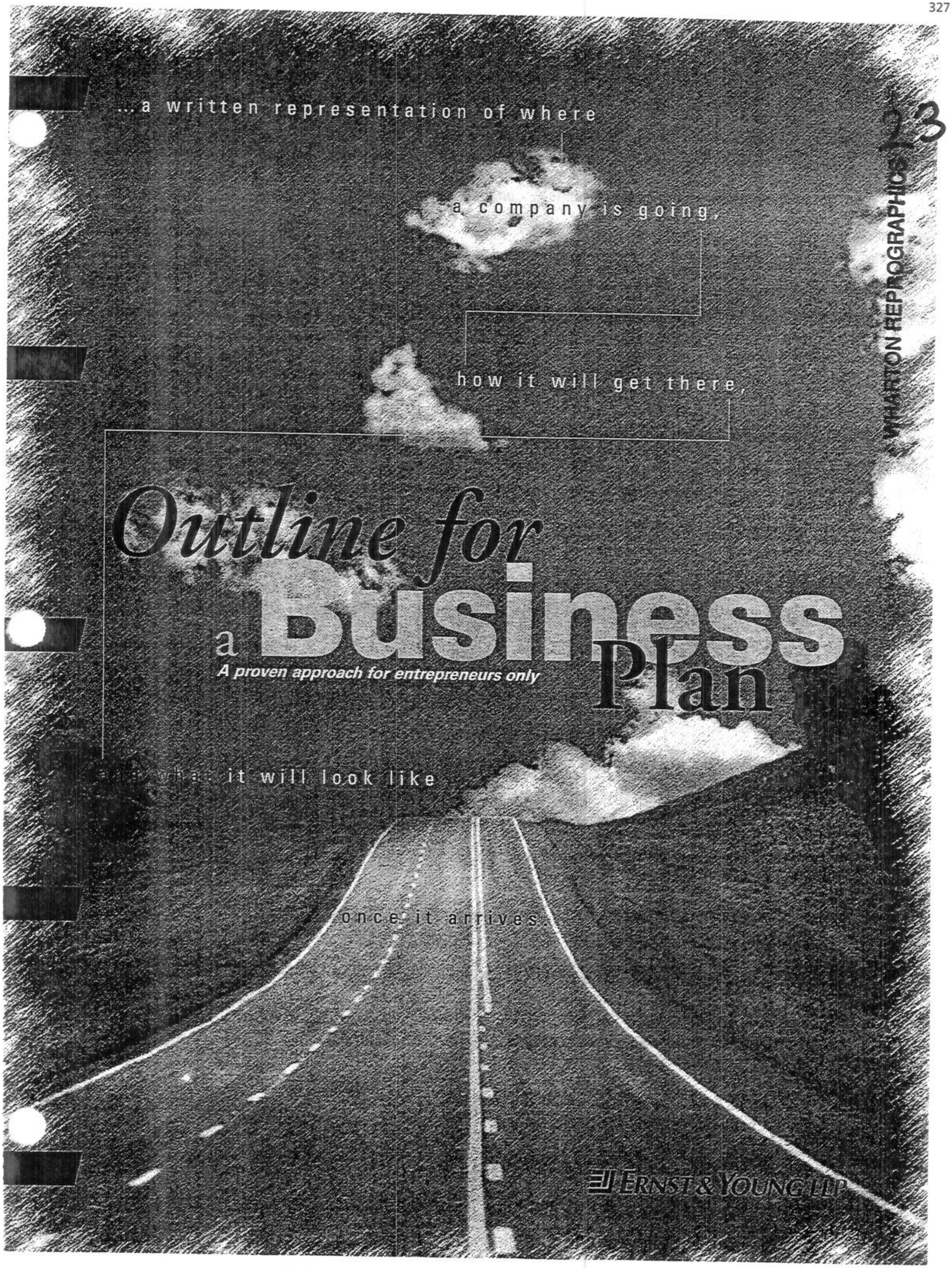
You need not know the answer to everything before you start. You must, however, start with the expectation that it is your responsibility to know the answers and to respond adequately to those steel-hearted outsiders who will ask them of you. And they will ask.

It is an inescapable fact that whatever omissions you make and risks you fail to identify in the pre-start phase will be automatically included in the venture. On the other hand, early identification and management of risk factors and the magnitude of the task can be opportunities for substantial profit.

One of the most common and often fatal mistakes for many first-time entrepreneurs is to believe that much of the responsibility for the pre-start phase can be delegated (e.g. particularly to professionals and technical experts such as lawyers and accountants), while forgetting that the accountability for the venture's results always rests with the lead entrepreneur and his/her team.

Despite its potential difficulty and complexity, pre-start analysis must have a very strong mandate in favor of decisiveness, timeliness, and go-no-go actions. You cannot get bogged down in "analysis paralysis."

If you can look across the issues suggested in this note for your own pre-start analysis and respond with well-considered answers, then you have passed the first gate on the journey of your entrepreneurial venture.



...a written representation of where a company is going, how it will get there, and what it will look like once it arrives.

Outline for a Business Plan

A proven approach for entrepreneurs only

WHARTON REPROGRAPHICS

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ERNST & YOUNG LLP

Business plans are the preferred mode of communication between entrepreneurs and potential investors. Experienced owners and managers of closely held businesses know that business plans can also be an indispensable management tool. Many have found that just completing the steps required to develop a business plan forces them to introduce discipline and a logical thought process into all of their planning activities. They have found that a properly prepared business plan can greatly improve their company's ability to consistently establish and meet goals and objectives in a way that best serves the company's owners, employees, and investors.

A business plan can take many forms, from a glossy, professionally produced document to a handwritten manuscript in a three-ring binder that serves as the documentation for the goals, objectives, strategies, and tactics of a company.

In any form, a business plan is simply a written representation of where a company is going, how it will get there, and what it will look like once it arrives.

Uses of a Business Plan

A business plan is a valuable management tool that can be utilized in a wide variety of situations.

In most companies, business plans are used at a minimum to:

- *Set the goals and objectives for the company's performance.*
- *Provide a basis for evaluating and controlling the company's performance.*
- *Communicate a company's message to middle managers, outside directors, lenders, and potential investors.*

When utilized most efficiently, the same business plan, with slight modification, can be used for all three actions.

Setting Goals and Objectives

The business plan for an early-stage company is, in many ways, a first attempt at strategic planning. An entrepreneur should use a business plan as a tool for setting the direction of a company over the next several years, and a plan should set the action steps and processes to guide the company through this period. Many entrepreneurs say that the pressures of the day-to-day management of a company leave them little time for planning, and this is unfortunate because, without it, an owner runs the risks of proceeding blindly through the rapidly changing business environment. Of course, writing a business plan is not a guarantee that problems will not arise. But, with a thoroughly thought-out plan, a business owner can better anticipate a crisis situation and deal with it up front. Further, a well-constructed plan can help avoid certain problems altogether. All in all, business planning is probably more important to the survival of a small and growing company than a larger, more mature one.

Performance Benchmarks

A business plan can also be used to develop and document milestones along your business's path to success. In the heat of daily operations, you may find that taking an objective look at the performance of your business is difficult. Often, the trees encountered daily obscure your view of the forest in which your company operates. A business plan can provide you and your management team with an objective basis for determining if the business is on track to meet the goals and objectives you have set.

Internal and External Communications

Your company's story must be told and retold many times to prospective investors, potential and new employees, outside advisors, and potential customers. And the most important part of the story is the part about the future, the part featured in a business plan.

Your business plan should show how all the pieces of your company fit together to create a vibrant organization capable of meeting its goals and objectives. It must be able to communicate your company's distinctive competence to anyone who might have an interest.

Steps in Preparing Your Business Plan

This booklet presents a generalized outline for writing a business plan. The outline is intended to be used with *Ernst & Young's Business Plan Guide,* published by John Wiley & Sons. The Guide can be purchased at many bookstores, or see page 15 for ordering information.

Listed below are the steps you should follow in preparing your business plan, whether you are writing it for the first time or rewriting it for the twentieth.

Step 1—Identify Your Objectives

Before you can write a successful business plan you must determine who will read the plan, what they already know about your company, what they want to know about your company, and how they intend to use the information they will find in the plan. The needs of your target audience must be combined with your communication objectives—what you want the reader to know. Once you have identified and resolved any conflicts between what your target audience wants to know and what you want them to know, you are ready to begin preparing a useful business plan.

Step 2—Outline Your Business Plan

Once you have identified the objectives for your business plan, and you know the areas that you want to emphasize, you should prepare an outline based on these special requirements. The outline can be as general or detailed as you wish, but typically a detailed outline will be more useful to you while you are writing your plan.

Step 3—Review Your Outline

Review your outline to identify the areas that, based on your readers and objectives, should be presented in detail or summary form in your business plan. Keep in mind that your business plan should describe your company at a high level and that extremely detailed descriptions are to be avoided in most cases. However, you must be prepared to provide detailed support for your statements and assumptions apart from your business plan if necessary.

Step 4—Write Your Plan

The order in which the specific elements of the plan are developed will vary depending on the age of your company and your experience in preparing business plans.

You will probably find it necessary to research many areas before you have enough information to write about them. Most people begin by collecting historical financial information about their company and/or industry, and completing their market research before beginning to write any part of their plan. Even though you may do extensive research before you begin to develop your plan, you may find that additional research is required before you complete it. You should take the time to complete the required research because many of the assumptions and strategies described in the plan will be based on the findings and analysis of your research.

Initial drafts of prospective financial statements are often prepared next, after the basic financial and market research and analysis are completed.

Step 4—Write Your Plan (continued)

By preparing these statements at this time, you will have a good idea which strategies will work from a financial perspective before investing many hours in writing a detailed description of them. As you develop your prospective statements, be certain that you keep detailed notes on the assumptions you make to facilitate preparation of the footnotes that must accompany the statements, as well as the composition of other business plan elements.

The last element of a business plan to be prepared is the Executive Summary. Since it is a summary of the plan, its contents are contingent on the rest of the document, and it cannot be written properly until the other components of the plan are essentially complete.

While preparing each element of your plan, refer to the outline in this booklet to be certain that you have covered each area thoroughly.

Step 5—Have Your Plan Reviewed

Once you have completed and reviewed a draft of your plan, have someone familiar with business management and the planning process review it for completeness (by referring to the outline in this publication), objectivity, logic, presentation, and effectiveness as a communications tool. Then, modify your plan based on your reviewer's comments.

Step 6—Update Your Plan

Business plans are "living" documents and must be periodically updated, or they become useless. As your environment and your objectives—and those of your readers—change, update your plan to reflect these changes. Refer to this booklet each time your plan is updated to be certain that all areas are properly covered.

I. Executive Summary

The Executive Summary should not be a mere listing of topics contained in the body of your business plan but should emphasize the key issues presented.

A critical point that must be communicated in the Executive Summary is your company's distinctive competence—the factors that will make your business successful in a competitive market.

A. *The Purpose of the Plan*

1. Attract investors
2. Document an operational plan for controlling the business

B. *Market Analysis*

1. The characteristics of your target market (demographic, geographic, etc.)
2. The products or services you will offer to satisfy those needs

C. *The Company*

1. The needs your company will satisfy
2. The products or services you will offer to satisfy those needs

D. *Marketing and Sales Activities*

1. Marketing strategy
2. Sales strategy
3. Keys to success in your competitive environment

E. *Product or Service Research and Development*

1. Major milestones
2. Ongoing efforts

F. *Organization and Personnel*

1. Key managers and owners
2. Key operations employees

G. *Financial Data*

1. Funds required and their use
2. Historical financial summary
3. Prospective financial summary (including a brief justification for prospective sales levels)

Note—In total, your Executive Summary should be less than three pages in length and provide the reader with a succinct overview of your entire business plan.

The Executive Summary should be followed by a brief table of contents designed to assist readers in locating specific sections in the plan. Detailed descriptions of the plan's contents should be avoided in the table of contents.

New Venture

If your company is new you could be sen ing your business plan to potential investors who review hundreds of them each year. More often than not, these individuals do not get past the Executive Summary of the plans they receive. Your Executive Summary must therefore give the reader a useful understanding of your business and make the point of most interest to them: "What is in it for the investor?"

II. Market Analysis

The Market Analysis section should reflect your knowledge of your industry, and present highlights and analysis of your market research. Detailed market research studies, however, should be presented as appendices to your plan.

A. *Industry Description and Outlook*
   1. Description of your primary industry
   2. Size of the industry
      - *a. Historically*
      - *b. Currently*
      - *c. In five years*
      - *d. In ten years*
   3. Industry characteristics and trends (Where is company in its life cycle?)
      - *a. Historically*
      - *b. Currently*
      - *c. In the future*
   4. Major customer groups
      - *a. Businesses*
      - *b. Governments*
      - *c. Consumers*

B. *Target Markets*
   1. Distinguishing characteristics of your primary target markets and market segments. Narrow your target markets to a manageable size. Efforts to penetrate target markets that are too broad are often ineffective.
      - *a. Critical needs*
      - *b. Extent to which those needs are currently being met*
      - *c. Demographics*
      - *d. Geographic location*
      - *e. Purchasing decision-makers and influencers*
      - *f. Seasonal/cyclical trends*
   2. Primary/target market size
      - *a. Number of prospective customers*
      - *b. Annual purchases of products or services meeting the same or similar needs as your products or services*
      - *c. Geographic area*
      - *d. Anticipated market growth*
   3. Market penetration—indicate the extent to which you anticipate penetrating your market and demonstrate why you feel that level of penetration is achievable based on your market research
      - *a. Market share*
      - *b. Number of customers*
      - *c. Geographic coverage*
      - *d. Rationale for market penetration estimates*
   4. Pricing/gross margin targets
      - *a. Price levels*
      - *b. Gross margin levels*
      - *c. Discount structure (volume, prompt payment, etc.)*
   5. Methods by which specific members of your target market can be identified
      - *a. Directories*
      - *b. Trade association publications*
      - *c. Government documents*

6. Media through which you can communicate with specific members of your target market
    a. *Publications*
    b. *Radio/television broadcasts*
    c. *Sources of influence/advice*

7. Purchasing cycle of potential customers
    a. *Needs identification*
    b. *Research for solutions to needs*
    c. *Solution evaluation process*
    d. *Final solution selection responsibility and authority (executives, purchasing agents, engineers, etc.)*

8. Key trends and anticipated changes within your primary target markets

9. Secondary target markets and key attributes
    a. *Needs*
    b. *Demographics*
    c. *Significant future trends*

C. *Market Test Results*
    1. Potential customers contacted
    2. Information/demonstrations given to potential customers
    3. Reaction of potential customers
    4. Importance of satisfaction of targeted needs
    5. Test group's willingness to purchase products/services at various price levels

D. *Lead Times (amount of time between customer order placement and product/service delivery)*
    1. Initial orders
    2. Reorders
    3. Volume purchases

E. *Competition*
    1. Identification (by product line or service and market segment)
        a. *Existing*
        b. *Market share*
        c. *Potential (How long will your "window of opportunity" be open before your initial success breeds new competition? Who will your new competitors likely be?)*
        d. *Direct*
        e. *Indirect*
    2. Strengths (competitive advantages)
        a. *Ability to satisfy customer needs*
        b. *Market penetration*
        c. *Track record and reputation*
        d. *Staying power (financial resources)*
        e. *Key personnel*
    3. Weaknesses (competitive disadvantages)
        a. *Ability to satisfy customer needs*
        b. *Market penetration*
        c. *Track record and reputation*
        d. *Staying power (financial resources)*
        e. *Key personnel*

New Venture

As your market analysis provides the only basis for your prospective sales and pricing estimates, make sure that this section clearly demonstrates that there is a market need for your product or service, that you as owner not only understan this need but can meet it, and that you can sell at a profit. This section should also include an estimate of your market penetration annually for the next five years.

II. Market Analysis (continued)

4. Importance of your target market to your competition
5. Barriers to entry into the market
    - *a. Cost (investment)*
    - *b. Time*
    - *c. Technology*
    - *d. Key personnel*
    - *e. Customer inertia (brand loyalty, existing relationships, etc.)*
    - *f. Existing patents and trademarks*

F. Regulatory Restrictions

1. Customer or governmental regulatory requirements
    - *a. Methods for meeting the requirements*
    - *b. Timing involved*
    - *c. Cost*
2. Anticipated changes in regulatory requirements

Writing this section is the first real test of your ability to communicate the essence of your business. The lack of a clear description of the key concepts of your company will indicate to the reader that you have not yet clearly defined it in your own mind. Therefore, you must be certain that this section concisely and accurately describes the substance of your new business.

III. Company Description

The Company Description section must provide an overview of how all of the elements of your company fit together without going into detail, since most of the subjects will be covered in depth elsewhere in the plan.

A. Nature of Your Business

1. Marketplace needs to be satisfied
2. Method(s) of need satisfaction (products and services)
3. Individuals/organizations with the needs

B. Your Distinctive Competencies (primary factors that will lead to your success)

1. Superior customer need satisfaction
2. Production/service delivery efficiencies
3. Personnel
4. Geographic location

IV. Marketing and Sales Activities

Both general and specific information must be included in this part of your plan. Your objective here is to describe the activities that will allow you to meet the sales and margin levels indicated in your prospective financial statements.

A. Overall Marketing Strategy

1. Marketing penetration strategy
2. Growth strategy
    - *a. Internal*
    - *b. Acquisition*
    - *c. Franchise*
    - *d. Horizontal (providing similar products to different users)*
    - *e. Vertical (providing the products at different levels of the distribution chain)*
3. Distribution channels (include discount/profitability levels at each stage)
    - *a. Original equipment manufacturers*
    - *b. Internal sales force*
    - *c. Distributors*
    - *d. Retailers*

4. Communication
    - *a. Promotion*
    - *b. Advertising*
    - *c. Public relations*
    - *d. Personal selling*
    - *e. Printed materials (catalogues, brochures, etc.)*

B. Sales Strategies

1. Sales force
    - *a. Internal vs. independent representatives (advantages and disadvantages of your strategy)*
    - *b. Size*
    - *c. Recruitment and training*
    - *d. Compensation*

2. Sales activities
    - *a. Identifying prospects*
    - *b. Prioritizing prospects*
    - *c. Number of sales calls made per period*
    - *d. Average number of sales calls per sale*
    - *e. Average dollar size per sale*
    - *f. Average dollar size per reorder*

Do not underestimate the importance of presenting a well-conceived sales strategy here. Without an efficient approach to beating a path to the doors of potential customers, companies with very good products and services often fail.

V. Products and Services

Special attention should be paid to the users of your business plan as you develop this section. Too much detail will have a negative impact on most external users of the plan. Avoid turning this section of your business plan into a policies and procedures manual for your employees.

A. Detailed Product/Service Description (from the user's perspective)

1. Specific benefits of product/service
2. Ability to meet needs
3. Competitive advantages
4. Present stage (idea, prototype, small production runs, etc.)

B. Product Life Cycle

1. Description of the product/service's current position within its life cycle
2. Factors that might change the anticipated life cycle
    - *a. Lengthen it*
    - *b. Shorten it*

C. Copyrights, Patents, and Trade Secrets

1. Existing or pending copyrights or patents
2. Anticipated copyright and patent filings
3. Key aspects of your products or services that cannot be patented or copyrighted
4. Key aspects of your products or services that qualify as trade secrets
5. Existing legal agreements with owners and employees
    - *a. Nondisclosure agreements*
    - *b. Noncompete agreements*

D. Research and Development Activities

1. Activities in process
2. Future activities (include milestones)

The emphasis in this section should be on your company's unique ability to satisfy the needs of the marketplace. Avoid criticizing your competition's products too severely in this section, because the natural tendency of a reader who is not part of your organization will be to empathize with the unrepresented party—your competition.

Concentrate on the positive aspects of your product's ability to meet existing market needs and allow your readers to come to their own conclusions about your competition based on the objective information presented here and in the Market Analysis section.

V. Products and Services (continued)

3. Anticipated results of future research and development activities
    - *a. New products or services*
    - *b. New generations of existing products or services*
    - *c. Complementary products or services*
    - *d. Replacement products or services*

4. Research and development activities of others in your industry
    - *a. Direct competitors*
    - *b. Indirect competitors*
    - *c. Suppliers*
    - *d. Customers*

VI. Operations

Here again, too much detail can detract from the rest of your plan. Be certain that the level of detail included fits the specific needs of the plan's users.

A. Production and Service Delivery Procedures
1. Internal
2. External (subcontractors)

B. Production and Service Delivery Capability
1. Internal
2. External (subcontractors)
3. Anticipated increases in capacity
    - *a. Investment*
    - *b. New cost factors (direct and indirect)*
    - *c. Timing*

C. Operating Competitive Advantages
1. Techniques
2. Experience
3. Economies of scale
4. Lower direct costs

D. Suppliers
1. Identification of the suppliers of critical elements of production
    - *a. Primary*
    - *b. Secondary*
2. Lead-time requirements
3. Evaluation of the risks of critical element shortages
4. Description of the existing and anticipated contractual relationships with suppliers

New Venture

Because many of the aspects of your new business are still theoretical at this point, special care must be taken to be sure the specifics of your operations do not conflict with the information included in your prospective financial statements. Any inconsistencies between those two areas will result in some unpleasant surprises as your company begins operations.

VII. Management and Ownership

Your management team's talents and skills are some of the few truly unique aspects of your company. If you are going to use your plan to attract investors, this section must emphasize your management's talents and skills, and indicate why they are a part of your company's distinctive competence that cannot easily be replicated by your competition. Remember that individuals invest in people, not ideas.

Do not use this section of the plan to negotiate future ownership of the company with potential investors. Simply explain the current ownership.

> **Because your management team is unique, make sure that you stress members' backgrounds and skills, and how they will contribute to the success of your product/service and business. This is especially important to emphasize when you are looking for financing.**

A. Management Staff Structure

1. Management staff organization chart
2. Narrative description of the chart

B. Key Managers (complete resumes should be presented in an appendix to the business plan)

1. Name
2. Position
3. Brief position description, including primary duties
4. Primary responsibilities and authority
5. Unique skills and experiences that add to your company's distinctive competencies
6. Compensation basis and levels (be sure they are reasonable—not too high and not too low)

C. Planned Additions to the Current Management Team

1. Position
2. Primary responsibilities and authority
3. Requisite skills and experience
4. Recruitment process
5. Timing of employment
6. Anticipated contribution to the company's success
7. Compensation basis and levels (be sure they are in line with the market)

D. Legal Structure of the Business

1. Corporation
    - *a. C corporation*
    - *b. S corporation*
2. Partnership
    - *a. General*
    - *b. Limited*
3. Proprietorship

E. Owners

1. Names
2. Percentage ownership
3. Extent of involvement with the company
4. Form of ownership
    - *a. Common stock*
    - *b. Preferred stock*
    - *c. General partner*
    - *d. Limited partner*

VII. Management and Ownership (continued)

5. Outstanding equity equivalents
    - *a. Options*
    - *b. Warrants*
    - *c. Convertible debt*

6. Common stock
    - *a. Authorized*
    - *b. Issued*

F. Board of Directors

1. Names
2. Position on the board
3. Extent of involvement with the company
4. Background
5. Contribution to the company's success
    - *a. Historically*
    - *b. In the future*

VIII. Funds Required and Their Uses

Any new or additional funding reflected in your prospective financial statements should be discussed here. Alternative funding scenarios can be presented if appropriate, and corresponding prospective financial statements are presented in subsequent sections of your plan.

New Ventures Remember that because the rate of return is their most important consideration—and that the initial public offering market is sometimes not available—investors will be looking for alternative exit strategies. Therefore, be flexible and creative in developing these opportunities, taking into consideration such recent trends as merger/acquisitions and strategic partnering. Although details can be worked out later, investors need to know that you understand their primary objectives as you develop your overall business strategy.

A. Current Funding Requirements

1. Amount
2. Timing
3. Type
    - *a. Equity*
    - *b. Debt*
    - *c. Mezzanine*
4. Terms

B. Funding Requirements over the Next Five Years

1. Amount
2. Timing
3. Type
    - *a. Equity*
    - *b. Debt*
    - *c. Mezzanine*
4. Terms

C. Use of Funds

1. Capital expenditures
2. Working capital
3. Debt retirement
4. Acquisitions

D. Long-Range Financial Strategies (liquidating investors' positions)

1. Going public
2. Leveraged buyout
3. Acquisition by another company
4. Debt service levels and timing
5. Liquidation of the venture

Note—Ernst & Young's Guide to Financing for Growth *contains a detailed discussion of various alternatives for raising capital and may provide you with some of the ideas and information you may need to write this portion of your business plan. The Guide, written by E&Y partners and published by John Wiley & Sons, can be purchased at many bookstores. See page 15 for additional ordering information.*

IX. Financial Data

The Financial Data section contains the financial representation of all the information presented in the other sections. Various prospective scenarios can be included, if appropriate.

A. Historical Financial Data (past three to five years, if applicable)

1. Annual statements
    - *a. Income*
    - *b. Balance sheet*
    - *c. Cash flows*
2. Level of CPA involvement (and name of firm)
    - *a. Audit*
    - *b. Review*
    - *c. Compilation*

B. Prospective Financial Data (next five years)

1. Next year (by month or quarter)
    - *a. Income*
    - *b. Balance sheet*
    - *c. Cash flows*
    - *d. Capital expenditure budget*
2. Final four years (by quarter and/or year)
    - *a. Income*
    - *b. Balance sheet*
    - *c. Cash flows*
    - *d. Capital expenditure budget*
3. Summary of significant assumptions
4. Type of prospective financial data
    - *a. Forecast (management's best estimate)*
    - *b. Projection ("what-if" scenarios)*
5. Level of CPA involvement
    - *a. Assembly*
    - *b. Agreed-upon procedures*
    - *c. Review*
    - *d. Examination*

C. Analysis

1. Historical financial statements
    - *a. Ratio analysis*
    - *b. Trend analysis with graphic presentation*
2. Prospective financial statements
    - *a. Ratio analysis*
    - *b. Trend analysis with graphic presentation*

New Ventures The Financial Data section of your business plan is another area where specialized knowledge can be invaluable. If you do not have someone with sufficient financial expertise on your management team, you will probably need to utilize an outside advisor.

X. Appendices or Exhibits

Any additional detailed or confidential information that could be useful to the readers of the business plan but is not appropriate for distribution to everyone receiving the body of the plan can be presented here. Accordingly, appendices and exhibits should be bound separately from the other sections of the plan and provided on an as-needed basis to readers.

A. *Resumes of Key Managers*
B. *Pictures of Products*
C. *Professional References*
D. *Market Studies*
E. *Pertinent Published Information*
  1. Magazine articles
  2. References to books
F. *Patents*
G. *Significant Contracts*
  1. Leases
  2. Sales contracts
  3. Purchase contracts
  4. Partnership/ownership agreements
  5. Stock option agreements
  6. Employment/compensation agreements
  7. Noncompete agreements
  8. Insurance
    a. Product liability
    b. Officers' and directors' liability
    c. General liability

In some instances, the thicker the business plan, the less likely a potential investor is to read it thoroughly. However, you do want to be able to demonstrate to potential funding sources that you have done a complete job in preparing your plan and that the comments made within it are well documented. By properly utilizing appendices and exhibits, you can keep the size of your business plan palatable to its users and still have the additional information they may require readily available.

Administrative Considerations

The copies of your plan should be controlled, and a distribution record should be kept. This process will allow you to update your distributed plans as needed and help to ensure that your plan is not more widely distributed than you intend. In fact, many plans include ethical disclaimers that limit the ability of individuals distributing or otherwise copying the plan without the consent of the company's owners. Remember too that an appropriate private placement disclaimer should be included if the plan is being used to raise capital.

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WHARTON REPROGRAPHICS

Analyzing the New Venture's Feasibility

To facilitate your using the First Venture-Analysis Procedure, each of its seven major parts will be briefly discussed to provide you with some guidance as to what you should think about and do to answer the questions asked.

A. *Description of Your Business.* You must first state clearly and simply what it is you are going to sell, to whom it will be sold, and what it will be used for. You should also know why the prospects in your target market will buy your product or service and at what price. You must be able to sell your idea to others convincingly, and to cite reactions to your product or service from several prospective customers. To do this, go out into the marketplace and talk to qualified prospects: people who can now or could in the near future use what you are offering, and who will make the purchasing decision on your product. Listen carefully to what these prospects tell you—both the positive and the negative comments. Venture capital investors are not generally impressed with a page full of rave reviews, because it usually shows that you only listened to the people you wanted to hear. Entrepreneurs have the habit of becoming deaf when they hear their ideas criticized, and venture capital investors are sensitive to this. Be aware of the negative aspects of your product as well as the good. And consider how to overcome these.

B. *Your Product or Service.* You must be well informed about your product or service. In particular about its:

1. *Development Status.* Is your product ready for sale? Are you still de-bugging a prototype? Is your idea just a paper dream so far? Don't fool yourself in answering these questions because many businesses have failed due to overly optimistic forecasts on the part of the entrepreneur. If you are not ready to start selling your product, admit it, and if necessary obtain an expert's opinion or qualify your own on the feasibility of your product idea, and the money and time needed to get it ready for sale.

2. *Strengths and Weaknesses.* You must be able to demonstrate the ability to look at your product or service objectively. You must be willing to discuss its weaknesses as well as its strengths. Focus especially on any weakness of your product which you think could put you at a disadvantage in the marketplace and what you would do to compensate for this. It is a rare new product or service that is better than its competition in all respects—or if it is, it is probably too expensive.

If the threat of technological obsolescence is a "fact of life" in the industry you are entering, show how you plan to react to threats to your product's longevity. Will you engage in R&D? Enter other markets? Introduce new products? Avoid statements such as "my company will pursue a vigorous policy of development and diversification." This type of statement may sound great coming from the chairman of the board of a major corporation, but to an investor it means that you can not see beyond your existing product or service.

First Checkpoint. At this point, it is just *possible* that you ought to abandon or alter your venture's product idea. A realistic estimate of the amount of money and time needed to get your product on the market may be beyond your own limits if not those of the investor. Professional investors generally don't like million-dollar start-ups that take five years to achieve profits. Raising capital to complete a prototype has always been difficult; and in today's market it is particularly hard. To succeed in raising venture capital, you will have to show your potential investors that the rewards possible from your venture are extremely large compared to the risks of development and obsolescence.

C. ***The Market—A Preliminary Evaluation.*** Far more new companies fail because of competition, inadequate market research, and poorly planned marketing and sales efforts than for any other reasons. Therefore, it is vital that you know your market thoroughly.

1. *Total Market Size and Trends.* You must first define your product's total potential market size clearly. For instance, if you are planning to market an aerosol product for cars and sell it in supermarkets in Wisconsin and Minnesota, don't confuse the investor (and yourself!) by discussing the nationwide market for automotive parts and accessories in all types of retail and wholesale outlets. Focus on *your* potential market, showing past, present, and "best estimates" for sales in dollars and in units for your market. If the data you have is sketchy, contradictory, and hard to interpret, admit it. It may be that you need to focus your efforts on getting better data *before* proceeding any further. Don't automatically assume that a number is good just because you see it in some respectable magazine or newspaper; remember that the journalist's livelihood does not depend on the accuracy of that one number—but yours might! Check several sources of market data. (See Market Data Sources below.)

2. *Assessment of Competition.* Be careful to look at all the ways in which the customer for your product or service can be satisfied. If your aerosol product is a windshield deicer, it has to compete with other aerosols and with window scrapers and windshield heaters. What would happen to your market if automotive manufacturers installed window heaters as standard equipment? Would consumers ignore window ice and stop buying your product?

Once you have determined your competition, find out as much as possible about each competitor. For this first analysis, you should have their names and addresses, and know where they fit into your market in terms of price, quality, innovations, market share and growth in market share, and aggressive marketing. Most importantly, who is profitable, and are they more or less profitable than they have been in the past? If all or most of the competitors are making very low profits, what makes you think that you can be very profitable in the business? What are the competitors' weaknesses and how could you use their weaknesses to get customers? Examine also your competitors' strengths. Is there any way of offsetting these strengths? Do you have to work around them or can you get someone else's customers?

If your prices are higher than those of the competition, how will you make sales? Why will customers buy on other than price? To deal with this issue, you will need to know firm prices (after hidden discounts) for each of your competitors, and you will need a first estimate of your costs and desired profitability. Remember, though, that most entrepreneurs underestimate their costs and overestimate their sales.

3. *Market Share.* Make a first estimate of the market share and sales you are aiming for in the first year, second year, and third year and be able to justify these estimates. This is a test of your ability to set realistic but challenging goals for yourself. Plans to dominate a market overnight will attract little support from the intelligent investor, so be realistic in setting estimates. Also don't assume that just because you are going after a small share of a large market you can easily achieve such a share.

4. *Marketing Tactics.* How are you going to sell and distribute your product? Many new companies hire agents who carry several companies' products to cut down on initial marketing expenses. Then, they realize too late that the salespeople have been leaving the

new company's literature in their cars and selling the products which are well known and take less effort. The new company then decides to hire its own sales force to avoid this problem. Before making distribution decisions, examine all of your alternatives, considering the service and warranty you are offering and what promotional backup will be necessary to support your chosen sales method.

Second Checkpoint. Read carefully the conditions stated for a viable venture in the first analysis procedure. If your venture does not satisfy them, you should look for a better opportunity.

D. Production and Operation. If you can sell your product, can you also make it to specifications and deliver it on time within competitive target cost levels? Do you know enough about your suppliers and the nearby labor market to be sure that your company will not face major operational problems? Will you be able to get the quantity and quality of materials needed? Will you be able to buy them at budgeted prices, from suppliers with a good record for on-time deliveries? Will you have to allow time and money to train your work force in any special skills? Do you have to rely on any unproven, custom-made production equipment?

Third Checkpoint. However exciting the market opportunity seems to be, you won't be profitable if you can not deliver your "solution" at an acceptable market price.

E. Entrepreneurs. Assume that, so far, everything looks great—on paper. Now the question is, who will develop and implement the idea? To answer this question, you should first list the know-how and skills you need for the new business, and then determine which of these skills are possessed by the people already involved in your plans. It is rare for a group at this stage to have on hand all of the skills needed, so you must recognize the gaps and find out how (and if) you can fill them.

When determining the skills already possessed by your team, ask what evidence exists to show that each person actually has the skill stated *and* that each person can devote sufficient time to the business for the team to utilize his/her skills.

Fourth Checkpoint. Until and unless you can assemble a management team that has the required skills and know-how and that you believe has a *much* better than even chance of developing and implementing your plan, you would be wise to wait, or to find a business prospect which is within your current reach.

F. Financing Required. If everything so far shows that you are ready to start your own business, you must now ask yourself how much money you need to "get the show on the road." Remember that when completing this section of the first analysis, estimates and "ball park figures" are appropriate. They give clues to the magnitude of financing you need and using them is better than ignoring the issues.

Once you have made a first estimate you should compare it to the size of the investment a venture capitalist normally makes to move a company from start-up to positive cash flow. If you need $1,000,000 just to get started, then you should probably forget your idea or *sell yourself* and your idea to a corporation with a large R & D budget. If you need between $250,000 and $500,000 you have a much better chance of obtaining capital from a professional investor. Even if your capital needs are small (less than $5,000) and you are not seeking funds from a venture capitalist, you will still need to determine if you can personally raise the required capital.

Fifth Checkpoint. Remember that the less capital you need, the better your chances of obtaining capital. Also, the greater the amount needed, the more potential you will need to show and the less risk. Underestimating your capital needs does not rid you of any problems, though, so be honest. As Louis Allen of Chase Manhattan's Venture Capital operation stated, "If the *only* mistake an entrepreneur makes is to understate his cash requirements, then his chances of succeeding are reduced by 75 percent."

G. Major Risks and Problems. As you review your analysis, you will see some things about which you are still unsure. Ask yourself *how important* those things are. If they are of major significance, does it mean that your venture is doomed? Are there ways of overcoming these obstacles? If so, how will you do it and how much will it cost? If you foresee no problems, you probably don't understand what you are getting yourself into. Test your perception of the risks and problems by reviewing your analysis with someone you trust and respect.

Final Checkpoint. Overall, the risks and problems should not seem too large compared to the potential opportunity and rewards. If this is not so, it may be wise for the entrepreneurs to consider another venture.

Market Data Sources

In doing a market analysis and determining market size, trends, competition, etc., full use should be made of the many available sources of market data. The librarian at the local business or university library should be able to guide you to data sources.

To give you a head start in finding market data, some of the primary available sources of information are listed below.

Trade Associations and Journals. Almost every industry has a Trade Association and a Journal. And these are some of the best sources of data about a specific industry. Trade journals print, on a regular basis, market surveys and forecasts. Moreover, the advertisements in trade journals provide an excellent source of information about competitors and their products. Attendance at trade association meetings and conversations with sales representatives can also be good ways of assessing the competition.

The trade associations and journals of various industries can be found in:

Encyclopedia of Associations
(Vol. 1, National Organizations of the United States)
Gale Research Co.
Book Tower
Detroit, Michigan

1971 Ayer Directory of Newspapers,
Magazines, and Trade Publications
Ayer Press
West Washington Square
Philadelphia, Pennsylvania 19106

General Marketing Data Sources. In addition to trade journals, data on the market size and trends in a great many industries can be found in:

Predicasts—Basebook
Predicast, Inc.
200 University Circle Research Center
11001 Cedar Avenue
Cleveland, Ohio 44106

U.S. Industrial Outlook
U.S. Department of Commerce
Government Printing Office
Washington, D.C.

Predicasts Basebook publishes abstracts of forecasts for U.S. statistics as well as those for a large number of industries and detailed products.

Sources of Market Studies. In addition to these broad-coverage data sources, market studies of particular industries and products are available from:

Predicasts
200 University Circle Research Center
11001 Cedar Avenue
Cleveland, Ohio 44106

Arthur D. Little
25 Acorn Park
Cambridge, Massachusetts 02140

Business Communications Co.
471 Glenbrook Rd.
Stamford, Connecticut 06906

Frost & Sullivan, Inc.
106 Fulton St.
New York, New York 10038

Morton Research Corp.
1745 Merrick Ave.
Merrick, New York 11566

Theta Technology Corp.
Peer Building
530 Silas Beane Hwy.
Wethersfield, Connecticut 06109

Prices of the studies and reports provided by these organizations range from $50 to $600. Further, for $150 Predicast will custom-search their library of a half million abstracts and provide 300 abstracts that are most relevant to a market research need.

Consumer Expenditures. Data on consumer expenditures at many places in the country can be found in:

Editor & Publisher Market Guide
Editor & Publisher Co.
850 Third Ave.
New York, New York 10022

U.S. Census Reports
Census of Business
Census of Housing
Census of Population

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WHARTON REPROGRAPHICS

How to Read a Financial Report

Merrill Lynch

How to Read a Financial Report

If you are a certified public accountant it is most unlikely that you can learn anything from reading this book. You don't need to be told the basics of understanding what's presented in corporate annual reports. If you aren't a certified public accountant, and you find that annual reports are "over your head," this booklet can help you to grasp the facts contained in such reports and possibly become a better informed investor. That is our principal aim in publishing this booklet, but we also hope that it will be useful to other readers who want to understand how business works and to learn more about the companies that provide them with goods and services, or that offer them employment.

Most annual reports can be broken down into three sections: the Executive Letter, the Business Review and the Financial Review. The Executive Letter gives a broad overview of the company's business and financial performance. The Business Review summarizes recent developments, trends and objectives of the company. The Financial Review is where business performance is quantified in dollars. This is the section we intend to clarify.

The Financial Review has two primary parts: Discussion and Analysis, and Audited Financial Statements. A third part might include information supplemental to the Financial Statements.

In the Discussion and Analysis, management explains changes in operating results from year to year. This explanation is presented mainly in a narrative format, with charts and graphs highlighting the comparisons. The operating results are numerically captured and presented in the Financial Statements.

The primary components of the Financial Statements are the balance sheet, income statement, statement of changes in shareholders' equity, statement of cash flows and footnotes. The balance sheet portrays the financial strength of the company by showing what the company owns and what it owes on a certain date. The balance sheet can be thought of as a snapshot photograph since it reports on financial position as of the end of the year. The income statement, on the other hand, is like a motion picture since it reports on how the company performed during the year and shows whether operations resulted in a profit or loss. The statement of changes in shareholders' equity reconciles the activity in the equity section of the balance sheet from year to year. Common changes in equity result from company profits or losses, dividends or stock issuances. The statement of cash flows reports on the movement of cash by the company for the year. The footnotes provide more detailed information on the balance sheet and income statement.

This booklet will focus on illustrating the basic financial statements and footnotes presented in annual reports in accordance with current practice. We will also include examples of financial methods used by investors to better analyze financial statements. In order to provide a framework for illustration, we will invent a company. The company will be a public company (a company whose shares are freely traded on the open market). The reason for choosing a public company is that it is required to provide the most extensive amount of information in its annual reports in accordance with guidelines issued by the Securities and Exchange Commission (SEC). Our company will represent a typical corporation with the most commonly used accounting and reporting practices. We'll call our company Typical Manufacturing Company, Inc.

A Few Words Before We Begin

The following four pages show a sample balance sheet, income statement, statement of changes in shareholders' equity and a statement of cash flows. These are the statements we will discuss in the first section. To simplify matters, we did not illustrate the Discussion and Analysis nor did we present examples of the Executive Letter or Business Review. In our sample statements, we've presented two years of financial results on the balance sheet and income statement and one year's activity on the statement of changes in shareholders' equity and statement of cash flows. This was also done for ease of illustration. If we were to comply with SEC requirements, we would have had to report the last three years of activity in the Income Statement, Statement of Changes in Shareholders' Equity and Statement of Cash Flows. Further SEC requirements that we did not illustrate include: presentation of selected quarterly financial data for the past two years, business segment information for the last three years, a listing of company directors and executive officers, and the market price of the company's common stock for each quarterly period within the two most recent fiscal years.

Typical
Manufacturing
Company Inc.

Consolidated Balance Sheet

December 31, 1989 and 1988 *(dollars in thousands)*

Assets	1989	1988
Current assets		
Cash	$ 20,000	$ 15,000
Marketable securities at cost which approximates market value	40,000	32,000
Accounts receivable—less allowance for doubtful accounts: 1989: $2,375, 1988: $3,000	156,000	145,000
Inventories	180,000	185,000
Prepaid expenses and other current assets	4,000	3,000
Total current assets	$400,000	$380,000
Property, plant and equipment		
Land	$ 30,000	$ 30,000
Buildings	125,000	118,500
Machinery	200,000	171,100
Leasehold improvements	15,000	15,000
Furniture, fixtures, etc.	15,000	12,000
Total property, plant and equipment	$385,000	$346,600
Less accumulated depreciation	125,000	97,000
Net property, plant and equipment	$260,000	$249,600
Intangibles (goodwill, patents)—less amortization	2,000	2,000
Total assets	$662,000	$631,600

See accompanying notes to consolidated financial statements.

December 31,1989 and 1988 *(dollars in thousands)*

Liabilities	1989	1988
Current liabilities		
Accounts payable	$ 60,000	$ 57,000
Notes payable	51,000	61,000
Accrued expenses	30,000	36,000
Income taxes payable	17,000	15,000
Other liabilities	12,000	12,000
Total current liabilities	$170,000	$181,000
Long-term liabilities		
Deferred income taxes	$ 16,000	$ 9,000
12.5% Debentures payable 2010	130,000	130,000
Other long-term debt	0	6,000
Total liabilities	$316,000	$326,000

Shareholders' Equity		
Preferred stock $5.83 cumulative, $100 par value authorized, issued and outstanding 60,000 shares	$ 6,000	$ 6,000
Common stock $5.00 par value, authorized 20,000,000 shares, issued 1989 15,000,000 shares, 1988 14,500,000 shares	75,000	72,500
Additional paid-in capital	20,000	13,500
Retained earnings	249,000	219,600
Foreign currency translation adjustments	1,000	(1,000)
Less: Treasury stock at cost (1989–1,000; 1988–1,000 shares)	5,000	5,000
Total shareholders' equity	$346,000	$305,600
Total liabilities and shareholders' equity	$662,000	$631,600

See accompanying notes to consolidated financial statements.

Typical
Manufacturing
Company Inc.

Consolidated Income Statement

Years ended December 31, 1989 and 1988 *(dollars in thousands)*	1989	1988
Net sales	$765,000	$725,000
Cost of sales	535,000	517,000
Gross margin	230,000	208,000
Operating expenses		
Depreciation and amortization	28,000	25,000
Selling, general and administrative expenses	96,804	109,500
Operating income	$ 105,196	$ 73,500
Other income (expense)		
Dividends and interest income	5,250	9,500
Interest expense	(16,250)	(16,250)
Income before income taxes and extraordinary loss	$ 94,196	$66,750
Income taxes	41,446	26,250
Income before extraordinary loss	$52,750	$ 40,500
Extraordinary item: Loss on early extinguishment of debt (net of income tax benefit of $750)	(5,000)	—
Net income	$47,750	$ 40,500
Common shares outstanding	14,999,000	14,499,000
Earnings per common share before extraordinary loss	$3.49	$2.77
Earnings per share-extraordinary loss	(.33)	—
Net income (per common share)	$3.16	$2.77

Consolidated Statement Of Changes In Shareholders' Equity

Year ended December 31, 1989 *(dollars in thousands)*

	Preferred Stock	Common Stock	Additional Paid-In Capital	Retained Earnings	Foreign Currency Translation Adjustment	Treasury Stock	Total
Balance January 1, 1989	$6,000	$72,500	$13,500	$219,600	($1,000)	($5,000)	$305,600
Net income				47,750			47,750
Dividends paid on:							
preferred stock				(350)			(350)
common stock				(18,000)			(18,000)
Common stock issued		2,500	6,500				9,000
Translation gain					$2,000		2,000
Balance December 31,1989	$6,000	$75,000	$20,000	$249,000	$1,000	($5,000)	$346,000

See accompanying notes to consolidated financial statements.

Typical
Manufacturing
Company Inc.

Consolidated Statement Of Cash Flows

Year ended December 31, 1989 *(dollars in thousands)*

Cash flows from operating activities:	
Net income	$47,750
Adjustments to reconcile net income to net cash from operating activities:	
Depreciation and amortization	$28,000
Increase in marketable securities	(8,000)
Increase in accounts receivable	(11,000)
Decrease in inventory	5,000
Increase in prepaid expenses and other current assets	(1,000)
Increase in deferred taxes	7,000
Increase in accounts payable	3,000
Decrease in accrued expenses	(6,000)
Increase in income taxes payable	2,000
Total Adjustments	$19,000
Net Cash Provided by Operating Activities	$66,750
Cash Flows from Investing Activities:	
Purchase of fixed assets	($38,400)
Net Cash Used in Investing Activities	($38,400)
Cash Flows from Financing Activities:	
Decrease in notes payable	(10,000)
Decrease in other long-term debt	(6,000)
Proceeds from issuance of common stock	9,000
Payment of dividends	(18,350)
Net Cash Used in Financing Activities	($25,350)
Effect of Exchange Rate Changes on Cash	$2,000
Increase in Cash	$5,000
Cash at beginning of year	15,000
Cash at end of year	$20,000

Income tax payments totaled $3,000 in 1989.
Interest payments totaled $16,250 in 1989.
See accompanying notes to consolidated financial statements.

The Balance Sheet

(dollars in thousands except per share amounts)

The balance sheet represents the financial picture as it stood on one particular day, December 31, 1989, as though the wheels of the company were momentarily at a standstill. Typical Manufacturing's balance sheet not only includes the most recent year, but also the previous year. This lets you compare how the company fared in its most recent years.

The balance sheet is divided into two sides: on the left are shown assets; on the right are shown liabilities and shareholders' equity. Both sides are always in balance. Each asset, liability and component of shareholders' equity reported in the balance sheet represents an "account" having a dollar amount or "balance". In the assets column, we list all the goods and property owned as well as claims against others yet to be collected. Under liabilities we list all debts due. Under shareholders' equity we list the amount the shareholders would split up if Typical were liquidated at its balance sheet value.

Assume that the corporation goes out of business on the date of the balance sheet. If that occurs, the illustration which follows shows you what Typical Manufacturing's shareholders might expect to receive as their portion of the business.

Total assets (Less: intangibles)	$660,000
Amount required to pay liabilities	316,000
Amount remaining for the shareholders	$344,000

Now, we are going to give you a guided tour of the balance sheet's accounts. We'll define each item, one by one, and explain how they work.

Assets

Current Assets

In general, current assets include cash and those assets which in the normal course of business will be turned into cash in the reasonably near future, i.e., generally within a year from the date of the balance sheet.

Cash

This is just what you would expect–bills and coins in the till (petty cash fund) and money on deposit in the bank.

1	**Cash**	**$ 20,000**

Marketable securities

This asset represents investment of excess or idle cash that is not needed immediately. In Typical's case it is invested in preferred stock. Because these funds may be needed on short notice, it is essential that the securities be readily marketable and subject to a minimum of price fluctuation. The general practice is to show marketable securities at cost or market, whichever is lower.

2	**Marketable securities at cost which approximates market value**	**$40,000**

Accounts receivable

Here we find the amount due from customers but not yet collected. When goods due are shipped prior to collection, a receivable is recorded. Customers are usually given 30, 60, or 90 days in which to pay. The amount due from customers is $158,375. However, experience shows that some customers fail to pay their bills, either because of financial difficulties or some catastrophic event (a tornado, a hurricane, or a flood) befalling their business. Therefore, in order to show the accounts receivable item at a figure representing expected receipts, the total is after a provision for doubtful accounts. This year that debt reserve was $2,375.

3	**Accounts receivable–less allowance for doubtful accounts $2,375**	**$156,000**

Inventories

The inventory of a manufacturer is composed of three groups: raw materials to be used in the product, partially finished goods in process of manufacture, and finished goods ready for shipment to customers. The generally accepted method of valuation of the inventory is *cost or market, whichever is lower*. This gives a conservative figure. Where this method is used, the value for balance sheet purposes will be cost, or perhaps less than cost if, as a result of deterioration, obsolescence, decline in prices, or other factors, less than cost can be realized on the inventory. Inventory valuation includes an allocation of production and other expenses as well as the cost of materials.

4 **Inventories**	**$180,000**

Consolidated Balance Sheet

December 31, 1989 and 1988 (dollars in thousands)			
	Assets	1989	1988
	Current Assets		
1	Cash	$ 20,000	$ 15,000
2	Marketable securities at cost which approximates market value	40,000	32,000
3	Accounts receivable—less allowance for doubtful accounts: 1989: $2,375. 1988: $3,000	156,000	145,000
4	Inventories	180,000	185,000
5	Prepaid expenses and other current assets	4,000	3,000
6	**Total current assets**	$400,000	$380,000
	Property, plant and equipment		
	Land	$ 30,000	$ 30,000
	Building	125,000	118,500
	Machinery	200,000	171,100
	Leasehold improvements	15,000	15,000
	Furniture, fixtures, etc.	15,000	12,000
7	**Total property, plant and equipment**	$385,000	$346,600
8	Less accumulated depreciation	125,000	97,000
9	**Net property, plant and equipment**	$260,000	$249,600
10	**Intangibles (goodwill, patents)-less amortization**	2,000	2,000
11	**Total assets**	$662,000	$631,600

Prepaid expenses

Prepaid expenses may arise for a situation such as this: During the year, Typical prepaid fire insurance premiums and advertising charges for the next year. Those insurance premiums and advertising services are as yet unused at the balance sheet date, so there exists an unexpended item, which will be used up over the next 12 months. If the advance payments had not been made, the company would have more cash in the bank. So, payments made in advance from which the company has not yet received benefits, but for which it will receive benefits next year, are listed among current assets as prepaid expenses.

5 **Prepaid expenses and other current assets**	**$4,000**

Deferred charges for such items as the introduction of a new product to the market, or for moving a plant to a new location, represent a type of asset similar to prepaid expenses. However, deferred charges are not included in current assets because the benefit from such expenditure will be reaped over several years to come. So the expenditure incurred will be gradually written off over the next several years, rather than fully charged off in the year payment is made. Our balance sheet shows no deferred charges because Typical has none. If it did, they would normally be included just before intangibles on the asset side of the ledger.

To summarize, the *total current assets* item includes primarily: cash, marketable securities, accounts receivable, inventories, and prepaid expenses.

6 **Total current assets**	**$400,000**

You will observe that these assets are mostly *working assets* in the sense that they are in a constant cycle of being converted into cash. Inventories, when sold, become accounts receivable; receivables, upon collection, become cash; cash is used to pay debts and running expenses. We will discover later on in the booklet how to make current assets tell a story.

Property, Plant and Equipment

Property, plant and equipment represents those assets not intended for sale that are used over and over again in order to manufacture the product, display it, warehouse it, transport it. This category will include land, buildings, machinery, equipment, furniture, automobiles and trucks. The generally accepted and approved method for valuation is *cost minus the depreciation accumulated* by the date of the balance sheet. Depreciation is discussed in the next section.

Property, plant and equipment	
Land	**$ 30,000**
Buildings	**125,000**
Machinery	**200,000**
Leasehold Improvements	**15,000**
Furniture, fixtures, etc.	**15,000**
7 **Total property, plant & equipment**	**$385,000**

The figure displayed is not intended to reflect market value at present or replacement cost in the future. While it is recognized that the cost to replace plant and equipment at some future date may be higher, that possible cost is obviously variable. For this reason, up to now, most companies have followed a general rule: *acquisition cost less accumulated depreciation based on that cost.*

Depreciation

This has been defined for accounting purposes as the decline in useful value of a fixed asset due to wear and tear from use and passage of time. Fixed assets may also suffer a decline in useful value from obsolescence because new inventions and more advanced techniques come to light that make the present equipment out of date.

The cost incurred to acquire the property, plant and equipment must be spread over the expected useful life, taking into consideration the factors discussed above. For example: Suppose a delivery truck costs $10,000 and is expected to last five years. Using a "straight-line" method of depreciation, its value will decline at the rate of $2,000 each year. The balance sheet at the end of one year would show:

Truck (cost)	**$10,000**
Less accumulated depreciation	**2,000**
Net depreciated value	**$ 8,000**

At the end of the second year it would show:

Truck (cost)	**$10,000**
Less accumulated depreciation	**4,000**
Net depreciated value	**$ 6,000**

In our sample balance sheet, there is shown a figure for accumulated depreciation. This amount is the total of accumulated depreciation for buildings, machinery, leasehold improvements and furniture and fixtures. Land is not subject to depreciation, and its listed value remains unchanged from year to year.

8	**Less accumulated depreciation**	**$125,000**

Thus, *net property, plant and equipment* is the valuation for balance sheet purposes of the investment in property, plant and equipment. As explained before, it consists of the cost of the various assets in this classification, less the depreciation accumulated to the date of the financial statement.

9	**Net property, plant and equipment**	**$260,000**

Depletion is a term used primarily by mining and oil companies or any of the so-called extractive industries. Since Typical Manufacturing is not in the mining business, we do not show depletion on the balance sheet. To deplete means to exhaust or use up. As the oil or other natural resource is used up or sold, a depletion reserve is set up to compensate for the natural wealth the company no longer owns.

Intangibles

These may be defined as assets having no physical existence, yet having substantial value to the company. Examples? A franchise to a cable TV company allowing exclusive service in certain areas, or a patent for exclusive manufacture of a specific article. It should be noted, however, that only intangibles purchased from other companies are shown on the balance sheet.

Another intangible asset sometimes found in corporate balance sheets is *goodwill*, which represents the amount by which the price of acquired companies exceeds the related values of net assets acquired. Company practices vary considerably in assigning value to this asset. Accounting rules now require one firm that buys another to write off the goodwill over a period not exceeding 40 years.

10	**Intangibles (goodwill, patents) less amortization**	**$2,000**

All of these items added together produce the figure listed on the balance sheet as *total assets.*

11	**Total assets**	**$662,000**

Liabilities

Consolidated Balance Sheet

December 31, 1989 and 1988

	Liabilities	1989	1988
	Current Liabilities		
12	Accounts payable	$ 60,000	$ 57.000
13	Notes payable	51,000	61.000
14	Accrued expenses	30,000	36.000
15	Income taxes payable	17,000	15.000
16	Other liabilities	12,000	12,000
17	**Total current liabilities**	$170,000	$181.000
	Long-term liabilities		
18	Deferred income taxes	$ 16,000	$ 9.000
19	12.5% Debentures payable 2010	130,000	130.000
20	Other long-term debt	0	6.000
21	**Total liabilities**	$316.000	$326.000
	Shareholders' Equity		
22	Preferred stock $5.83 cumulative, $100 par value, authorized, issued and outstanding 60.000 shares	$ 6,000	$ 6.000
23	Common stock $5.00 par value, authorized 20.000.000 shares, issued 1989 15.000.000 shares, 1988 14,500.000 shares	75,000	72.500
24	Additional paid-in capital	20,000	13.500
25	**Retained earnings**	249,000	219.600
26	Foreign currency translation adjustments	1,000	(1.000)
27	Less: Treasury stock at cost (1989-1,000; 1988-1,000)	5,000	5.000
28	**Total shareholders' equity**	$346,000	$305.600
29	**Total liabilities and shareholders' equity**	$662,000	$631.600

Current Liabilities

This item generally includes all debts that fall due within 12 months. The *current assets* item is a companion to *current liabilities* because current assets are the source from which payments are made on current debts. The relationship between the two is one of the most revealing things to be learned from the balance sheet, and we will go into that later on. For now we need to define the subgroups within current liabilities.

Accounts payable

The *accounts payable* item represents the amounts that the company owes to its regular business creditors from whom it has bought goods or services on open account.

12	Accounts payable	$ 60,000

Notes payable

If money is owed to a bank, individual, corporation or other lender, it appears on the balance sheet under *notes payable*, as evidence of the fact that a written promissory note has been given by the borrower.

13	Notes payable	$ 51,000

Accrued expenses

Now we have defined accounts payable as the money owed by the company to its regular business creditors. The company also owes, on any given day, salaries and wages to its employees, interest on funds borrowed from banks and from bondholders, fees to attorneys, insurance premiums, pensions, and similar items. To the extent that the amounts owed and not recorded on the books are unpaid at the date of the balance sheet, these expenses are grouped as a total under *accrued expenses*.

14	Accrued expenses	$ 30,000

Income tax payable

The debt due to the various taxing authorities such as the Internal Revenue Service is the same as any other liability under accrued expenses. But because of the amount and the importance of the tax factor, it is generally stated separately as *income taxes payable*.

15	Income taxes payable	$17,000

Net asset value per bond

To state this figure conservatively, intangible assets are subtracted as if they have no value on liquidation. Current liabilities of $170,000 are considered paid. This leaves $490,000 in assets to pay the bondholders. So $3,769 in net asset value protects each $1,000 bond.

11	**Total assets**	**$662,000**
10	**Less: intangibles**	**2,000**
	Total tangible assets	**$660,000**
17	**Less: current liabilities**	**170,000**
	Net tangible assets available to meet bondholders' claims	**$490,000**

$\frac{\$490,000}{\$130}$ **= $3,769 net asset value per $1,000 bond**

bonds outstanding

Net asset value per share of preferred stock

To calculate net asset value of a preferred share, we take total assets, conservatively stated at $660,000 (eliminating $2,000 of intangible assets). Current liabilities of $170,000 and long-term liabilities are considered paid. This leaves $344,000 of assets protecting the preferred. So, $5,733 in net asset value backs each share of preferred.

11	**Total assets**	**$662,000**
10	**Less: intangibles**	**2,000**
	Total tangible assets	**$660,000**
17	**Less: current liabilities**	**$170,000**
18, 19, 20	**long-term liabilities**	**146,000**
	Net assets backing the preferred stock	**$344,000**

$\frac{\$344,000,000}{60,000}$ **= $5,733 net asset value per share of preferred stock**

shares of preferred stock outstanding

Net book value per share of common stock

The net book value per share of common stock can be looked upon as meaning the amount of money each share would receive if the company were liquidated, based on balance-sheet values. Of course, the preferential shareholders would first have to be satisfied. The answer, $22.54 net book value per share of common stock, is arrived at as follows:

11	**Total assets**		**$662,000**
10	**Less: intangibles**		**2,000**
	Total tangible assets		**$660,000**
17	**Less: current liabilities**	**$170,000**	
18, 19 & 20	**long-term liabilities**	**146,000**	
22	**preferred stock**	**6,000**	
			$322,000
	Net assets available for the common stock		**$338,000**

$\frac{\$338,000,000}{14,999,000}$ **= $22.54 net asset value per share of common stock**

shares of common stock outstanding

An alternative method of arriving at the common shareholders' equity—conservatively stated at $338,000—is:

23	**Common stock**	**$ 75,000**
24	**Additional paid-in capital**	**20,000**
25	**Retained earnings**	**249,000**
26	**Foreign currency translation adjustments**	**1,000**
27	**Treasury stock**	**(5,000)**
		$340,000
10	**Less: intangible assets**	**(2,000)**
	Total common shareholders' equity	**$338,000**

$\frac{\$338,000,000}{14,999,000}$ **= $22.54 net book value per share of common stock**

shares of common stock outstanding

Do not be misled by book value figures, particularly of common stocks. Profitable companies often show a very low net book value and very substantial earnings. Railroads, on the other hand, may show a high book value for their common stock but have such low or irregular earnings that the stock's market price is much less than its book value. Insurance companies, banks, and investment companies are exceptions. Because their assets are largely liquid (cash, accounts receivable, and marketable securities), the book value of their common stock is sometimes a fair indication of market value.

Capitalization Ratio

The proportion of each kind of security issued by a company is the *capitalization ratio*. A high proportion of bonds sometimes reduces the attractiveness of both the preferred and common stock, and too much preferred can detract from the common's value. That's because bond interest must be paid before preferred dividends, and preferred dividends before common dividends.

To get Typical's *bond ratio* divide the face value of the bonds, $130,000, by the total value of bonds, preferred and common stock, additional paid-in capital, retained earnings, foreign currency translation adjustments and treasury stock, less intangibles, which is $474,000. This shows bonds amount to about 27% of Typical's total capitalization.

19	Debentures	$130,000
22	Preferred stock	6,000
23	Common stock	75,000
24	Additional paid-in capital	20,000
25	Retained earnings	249,000
26	Foreign currency translation adjustments	1,000
27	Treasury stock	(5,000)
10	Less: intangibles	(2,000)
	Total capitalization	$474,000

The *preferred stock ratio* is found the same way—divide preferred stock of $6,000 by the entire capitalization of $474,000. The result is about 1%.

The *common stock ratio* will be the difference between 100% and the total of the bond and preferred stock ratio–or about 72%. The same result is reached by combining common stock, additional paid-in capital, retained earnings, foreign currency translation adjustments and treasury stock.

		Amount	Ratio
19	Debentures	$130,000	27%
22	Preferred stock	6,000	1%
10 & 23 - 27	Common stock (including additional paid-in capital, related earnings, and foreign currency translation adjustments less: treasury stock, and intangibles)	338,000	72%
	Total	$474,000	100%

The Income Statement

(dollars in thousands except per share amounts)

Now we come to the payoff for many potential investors, the income statement. It shows how much the corporation earned or lost during the year. It appears on page 6 of this booklet.

While the balance sheet shows the fundamental soundness of a company by reflecting its financial position at a given date, the income statement may be of greater interest to investors because it shows the record of its operating activities for the whole year. It serves as a valuable guide in anticipating how the company may do in the future. The figure given for a single year is not nearly the whole story. The historical record for a series of years is more important than the figure of any single year. Typical includes two years in its statement and gives a ten-year financial summary as well, which appears on page 30.

An income statement matches the amounts received from selling goods and services and other items of income against all the costs and outlays incurred in order to operate the company. The result is a *net income* or a *net loss* for the year. The costs incurred usually consist of cost of sales; overhead expenses such as wages and salaries, rent, supplies, depreciation; interest on money borrowed; and taxes.

Consolidated Income Statement

	Years ended December 31, 1989 and 1988 (dollars in thousands except per share amounts)	1989	1988
30	Net sales	$765,000	$725,000
31	Cost of sales	535,000	517,000
32	Gross margin	230,000	208,000
	Operating Expenses		
33	Depreciation and amortization	28,000	25,000
34	Selling, general and administrative expenses	96,804	109,500
35	Operating income	$105,196	$ 73,500
	Other income (expense)		
36	Dividends and interest income	5,250	9,500
37	Interest expense	(16,250)	(16,250)
38	Income before income taxes and extraordinary loss	$ 94,196	$66,750
39	Income taxes	41,446	26,250
40	Income before extraordinary loss	$ 52,750	$ 40,500
41	Extraordinary item: Loss on early extinguishment of debt (net of income tax benefit of $750)	(5,000)	–
42	**Net Income**	**$ 47,750**	**$ 40,500**
43	**Common shares outstanding**	14,990,000	14,499,000
44	Earnings per share of common stock before extraordinary loss	$3.49	$2.77
45	Earnings per share - extraordinary loss	(.33)	–
46	**Net Income (per common share)**	$3.16	$2.77

Net Sales

The most important source of revenue always makes up the first item on the income statement. In Typical Manufacturing, it is *net sales*. It represents the primary source of money received by the company from its customers for goods sold or services rendered. The *net sales* item covers the amount received after taking into consideration returned goods and allowances for reduction of prices. By comparing 1989 and 1988, we can see if Typical had a better year in 1989, or a worse one.

30	Net sales	$765,000	$725,000

Cost of Sales

In a manufacturing establishment, this represents all the costs incurred in the factory in order to convert raw materials into finished products. These costs are commonly known as product costs. Product costs are those costs which can be identified with the purchase or manufacture of goods made available for sale. There are three basic components of product cost: direct materials; direct labor; and manufacturing overhead. Direct materials and direct labor costs can be directly traced to the finished product. For example, for a furniture manufacturer, lumber would be a direct material cost and carpenter wages would be a direct labor cost. Manufacturing overhead costs, while associated with the manufacturing process, cannot be traceable to the finished product. Examples of manufacturing overhead costs are costs associated with operating the factory plant (plant depreciation, rent, electricity, supplies, maintenance and repairs, and production foremen salaries).

31	Cost of sales	$535,000

Gross Margin

Gross Margin is the excess of sales over cost of sales. It represents the residual profit from sales after considering product costs.

32	Gross margin	$230,000

Depreciation and amortization

Depreciation is the decline in useful value of an asset due to wear and tear. Each year's decline in value of non-manufacturing facilities would be captured here. Amortization is the decline in useful value of an intangible, such as a 17-year patent.

33	Depreciation and amortization	$ 28,000

Selling, general and administrative expenses

These expenses are generally grouped separately from cost of sales so that the reader of an income statement may see the extent of selling and administrative costs. They include salesmen's salaries and commissions, advertising and promotion, travel and entertainment, executives' salaries, office payroll and office expenses.

34	Selling, general and administrative expenses	$ 96,804

Subtracting all operating expenses from the net sales figure gives us the *operating income.*

35	Operating income	$105,196

An additional source of revenue comes from dividends and interest received by the company from its investment in stocks and bonds. This is listed separately under an item called *other income (expense).*

36	Dividends and interest income	$ 6,000

Interest Expense

The interest paid to bondholders for the use of their money is sometimes referred to as a *fixed charge* for the reason that the interest must be paid year after year whether the company is making money or losing money. Interest differs from dividends on stocks, which are payable only if the board of directors declares them.

Interest paid is another cost of doing business and is deductible from earnings in order to arrive at a base for the payment of income taxes.

Typical Manufacturing's debentures, carried on the balance sheet as a long-term liability, bear 12.5% interest per year on $130,000. Thus the interest expense in the income statement is equal to $16,250 per year. It shows up under *other income (expense).*

37	Interest expense	$ 16,250

Income Taxes

Each corporation has a basic tax rate, which depends on the level and nature of its income. Large corporations like Typical Manufacturing are subject to the top corporate income tax rate, but tax credits tend to lower the overall tax rate. Typical's income before taxes is $94,196; the tax comes to $41,446.

38	Income before provision for income taxes	$ 94,196
39	Provision for income taxes	41,446

Income Before Extraordinary Loss

After we have taken into consideration all ordinary income (the plus factors) and deducted all ordinary costs (the minus factors), we arrive at *income before extraordinary loss* for the year.

40	Income before extraordinary loss	$ 52,750

Extraordinary Loss

Under ordinary conditions, the above income of $52,750 would be the end of the story. However, there are years in which companies experience unusual and infrequent events called *extraordinary items.* Examples of extraordinary items include debt extinguishments, tax loss carryforwards, pension plan terminations and litigation settlements. In this case, Typical extinguished a portion of its debt early. This event is isolated on a separate line, net of its tax effect. Its earnings per share impact is also segregated from the earnings per share attributable to "normal" operations.

41	Loss on early extinguishment of debt (net of tax benefit of $750)	($5,000)

Net Income

Once all income and costs, including extraordinary items, are considered, we arrive at net income.

42	**Net income**	**$47,750**

Condensed, the income statement looks like this:

	Plus factors:	
30	Net sales	$765,000
36	Dividends and Interest	5,250
	Total	$770,250
	Minus factors:	
31	Cost of sales	$535,000
33-34	Operating expenses	$124,804
37	Interest expense	16,250
39	Provision for income taxes	41,446
	Total	717,500
40	Net income before extraordinary loss	$ 52,750
41	Extraordinary loss	(5,000)
42	Net income	$ 47,750

Other Items

Two other items that do not apply to Typical could appear on an income statement. First, U.S. companies that do business overseas may have transaction gains or losses related to fluctuations in foreign currency exchange rates.

Second, if a corporation owns more than 20% but less than 51% of the stock of a subsidiary company, then the corporation must show its share of the subsidiary's earnings–minus any dividends received from the subsidiary–on its income statement. For example, if the corporation's share of the subsidiary's earnings is $1,200 and the corporation received $700 in dividends from the company, then the corporation must include $500 on its income statement under the category *equity in unconsolidated subsidiaries*. The corporation must also increase its investment in the company to the extent of the earnings it picks up on its income statement.

Analyzing the income statement

The income statement will tell us a lot more if we make a few detailed comparisons. Before you invest in a company, you want to know its *operating margin of profit* and how it has changed over the years. Typical had sales of $765,000,000 in 1989 and showed $105,196,000 as the operating income.

$$\begin{matrix}35\\30\end{matrix}\qquad \frac{\$105{,}196 \text{ operating income}}{\$765{,}000 \text{ sales}} = 13.8\%$$

This means that for each dollar of sales 13.8¢ remained as a gross profit from operations. This figure is interesting, but it is more significant if we compare it with the profit margin last year.

$$\begin{matrix}35\\30\end{matrix}\qquad \frac{\$\ 73{,}500 \text{ operating income}}{\$725{,}000 \text{ sales}} = 10.1\%$$

Typical's profit margin went from 10.1% to 13.8%, so business didn't just grow, *it became more profitable*. Changes in profit margin can reflect changes in efficiency, in product line or types of customers served.

We can also compare Typical with other companies in its field. If our company's profit margin is very low compared to others, it is an unhealthy sign. If it is high, there are grounds for optimism.

Analysts also frequently use *operating cost ratio* for the same purpose. Operating cost ratio is the complement of the margin of profit. Typical's profit margin is 13.8%. The operating cost ratio is 86.2%.

		Amount	Ratio
30	Net sales	$765,000	100.0%
31, 33, 34	Operating costs	659,804	86.2%
35	Operating income	$105,196	13.8%

Net profit ratio is still another guide to indicate how satisfactory the year's activities have been. In Typical Manufacturing, the year's net income was $47,750. The net sales for the year amounted to $765,000. Therefore, Typical's income was $47,750 on $765,000 of sales or:

$$\begin{matrix}42\\30\end{matrix}\qquad \frac{\$\,47{,}750_{\text{net income}}}{\$765{,}000_{\text{sales}}} = 6.2\%$$

This means that this year for every $1 of goods sold, 6.2¢ in profit ultimately went to the company. By comparing the net profit ratio from year to year for the same company and with other companies, we can best judge profit progress.

Last year, Typical's net income was $40,500 on $725,000 in sales:

$$\begin{matrix}42\\30\end{matrix}\qquad \frac{\$\,40{,}500_{\text{net income}}}{\$725{,}000_{\text{sales}}} = 5.6\%$$

We can compare the U.S. Department of Commerce's latest available average profit margins for all U.S. manufacturers to the profit margins calculated from Typical's 10-year summary on page 30.

The margin of profit ratio, the operating cost ratio, and the net profit ratio, like all those we examined in connection with the balance sheet, give us general information about the company and help us judge its prospects for the future. All these comparisons have significance for the long term, because they tell us about the fundamental economic condition of the company. One question remains: are the securities a good investment for you now? For an answer, we must look at some additional factors.

Profit Margins (After Tax)

	1983	1984	1985	1986	1987
Average of U.S. Manufacturers	4.1	4.6	3.8	3.8	4.9
Typical	6.1	5.3	5.0	5.1	5.5

Interest Coverage

The bonds of Typical Manufacturing represent a very substantial debt, but they are due many years in the future. The yearly interest, however, is a fixed charge, and we want to know how readily the company can pay the interest. More specifically, we would like to know whether the borrowed funds have been put to good use so that the earnings are ample and thus available to meet interest costs.

The available income representing the source for payment of the bond interest is $110,446 (operating profit plus dividends and interest). The annual bond interest amounts to $16,250. This means the annual interest expense is covered 6.8 times.

$$37\qquad \frac{\$110{,}446_{\text{available income}}}{\$\,16{,}250_{\text{interest on bonds}}} = 6.8\%$$

Before an industrial bond can be considered a safe investment, most analysts say that the company should earn its bond interest requirement three to four times over. By these standards, Typical Manufacturing has a fair margin of safety.

What About Leverage?

A stock is said to have high leverage if the company that issued it has a large proportion of bonds and preferred stock outstanding in relation to the amount of common stock. A simple illustration will show why. Let's take, for example, a company with $10,000,000 of 4% bonds outstanding. If the company is earning $440,000 before bond interest, there will only be $40,000 left for the common stock after payment of $400,000 bond interest ($10,000,000 at 4% equals $400,000). However, an increase of only 10% in earnings (to $484,000) will leave $84,000 for common stock dividends, or an increase of more than 100%. If there is only a small amount of common stock issued, the increase in earnings per share will appear very impressive.

You have probably realized that a decline of 10% in earnings would not only wipe out everything available for the common stock, but also result in the company's being unable to cover its full interest on its bonds without dipping into accumulated earnings. This is the great danger of so-called high-leverage stocks and also illustrates the fundamental weakness of companies that have a disproportionate amount of debt or preferred stock. Conservative investors usually steer clear of them, although these stocks do appeal to people who are willing to assume the risk.

Typical Manufacturing, on the other hand, is not a highly leveraged company. Last year, Typical paid $16,250 in bond interest and its net profit–before this payment–came to $56,750. This left $40,500 for the common stock and retained earnings. Now look what happened this year. Net profit before subtracting bond interest rose by $7,250, or about 13%. Since the bond interest stayed the same, net income after paying this interest also rose $7,250. But that is about 18% of $40,500. While this is certainly not a spectacular example of leverage, 18% is better than 13%.

Preferred Dividend Coverage

To calculate the *preferred dividend coverage* (the number of times preferred dividends were earned), we must use net profit as our base, because federal income taxes and all interest charges must be paid before anything is available for shareholders. Because we have 60,000 shares of $100 par value preferred stock that pays a dividend of $5.83 1/3, the total dividend requirement for the preferred stock is $350,000. Dividing the net income of $47,750,000 by this figure we arrive at approximately 136.4, which means that the dividend requirement of the preferred stock has been earned more than 136 times over. This ratio is so high partly because Typical has only a small amount of preferred stock outstanding.

Earnings Per Common Share

The buyer of common stock is often more concerned with the earnings per share of a stock than with the dividend. This is because earnings per share usually influence stock market prices. Although our income statement separates earnings per share before and after the effect of the extraordinary item, the remainder of our presentation will only consider earnings per share after the extraordinary item. In Typical's case the income statement shows the earnings available for the common stock.

46	**Earnings per share**	**$3.16**

But if it didn't, we could calculate it ourselves:

42	**Net profit for the year**	**$47,750**
	Less: dividend requirements on preferred stock	**350**
	Earnings available for the common stock	**$47,400**

$$\frac{\$47{,}400{,}000 \quad \text{earnings available after preferred dividends}}{14{,}999{,}000 \quad \text{number of outstanding common-shares}} = \$3.16 \text{ earnings per share of common}$$

Typical's capital structure is a very simple one comprised of common and preferred stock. Our earnings per share computation will suffice under this scenario. However, if the capital structure is more complex and contains securities which are convertible into common stock, options, warrants or contingently issuable shares, the calculation requires modification. In fact, two separate calculations must be performed. This is called dual presentation. The calculations are primary and fully diluted earnings per common share.

Primary Earnings Per Common Share

This is determined by dividing the earnings for the year not only by the number of shares of common stock outstanding but by the common stock plus *common stock equivalents if dilutive.*

Common stock equivalents are securities, such as convertible preferred stock, convertible bonds, stock options, warrants and the like, that enable the owner to become a common shareholder by exchanging or converting the security. These are deemed to be only one step short of common stock–their value stems in large part from the value of the common to which they relate.

Convertible preferred stock and convertible bonds offer the holder either a specified dividend rate or interest return, or the option of participating in increased earnings on the common stock, through conversion. They don't have to be actually converted to common stock for these securities to be called a common stock equivalent. This is because they are in substance equivalent to common shares, enabling the holder at his discretion to cause an increase in the number of common shares by exchanging, or converting. How do accountants determine a common stock equivalent? A convertible security is considered a common stock equivalent if its effective yield at the date of its issuance is less than two-thirds of the then current average Aa corporate bond yield.

Now let's put our new terms to work in an example, remembering that it has nothing to do with our own company, Typical Manufacturing. We start with the facts we have available. We'll say we have 100,000 shares of common stock outstanding plus another 100,000 shares of preferred stock, convertible into common on a share-for-share basis. (Assume they qualify as common stock equivalents.) We add the two and get 200,000 shares altogether. Now let's say our earnings figure is $500,000 for the year. With these facts, our primary computation is easy:

$$\frac{\$500{,}000 \quad \text{earnings for the year}}{200{,}000 \quad \text{adjusted shares outstanding}} = \$2.50 \text{ primary earnings per share}$$

However, as mentioned earlier, the common stock equivalent shares are only included in the computation if the effect of conversion on earnings per share is dilutive. Dilution occurs when earnings per share decrease or loss per share increases. For example, assume the preferred stock paid $3 a share in dividends. Without conversion, the earnings per share would be $2, as opposed to $2.50 per share, because net income available for common after payment of dividends would be $200,000 ($500,000 less $300,000) divided by the 100,000 common shares outstanding. In this case, the common stock equivalent shares would be excluded from the computation because conversion results in a higher earnings per share (anti-dilutive). Therefore, earnings per share of $2 will be reflected on the income statement.

Fully Diluted Earnings Per Common Share

The primary earnings per share item, as we have just seen in the preceding section, takes into consideration common stock and common stock equivalents. The purpose of *fully diluted earnings per share* is to reflect maximum potential dilution in earnings that would result if all contingent issuances of common stock had taken place at the beginning of the year.

This computation is the result of dividing the earnings for the year by: *common stock* and *common stock equivalents* and *all other securities that are convertible (even though they do not qualify as common stock equivalents).*

How would it work? First, remember that we have 100,000 shares of convertible preferred outstanding, as well as our 100,000 in common. Now, let's say we also have convertible bonds with a par value of $10,000,000 outstanding. These bonds pay 6% interest and have a conversion ratio of 20 shares of common for every $1,000 bond. Assume the current average Aa corporate bond yield is 8%. These bonds are not common stock equivalents, because 6% is not less than two-thirds of 8%. However, for fully diluted earnings per share we have to count them in. If the 10,000 bonds were converted, we'd have another 200,000 shares of stock, so adding everything up gives us 400,000 shares. But by converting the bonds, we could skip the 6% interest payment, and that gains us another $600,000 gross earnings. So our calculation looks like this:

Earnings for the year		**$500,000**
Interest on the bonds	**$600,000**	
Less: the income tax applicable to deduction	**300,000**	
		300,000
Adjusted earnings		**$800,000**

$$\frac{\$800{,}000 \ \text{adjusted earnings}}{400{,}000 \ \text{adjusted shares outstanding}} = \$2$$

fully diluted earnings per share

The only remaining step is to test for dilution. Earnings per share without bond conversion would be $2.50 ($500,000 divided by 200,000 shares). Since earnings per share of $2 is less than $2.50 we would assume debt conversion in our calculation of fully diluted earnings per share.

Price-earnings Ratio

Both the price and the return on common stock vary with a multitude of factors. One such factor is the relationship that exists between the earnings per share and the market price. It is called the *price-earnings ratio*, and this is how it is calculated: If a stock is selling at 25 and earning $2 per share, its price-earnings ratio is 12 1/2 to 1, usually shortened to 12 1/2 and the stock is said to be selling at 12 1/2 times earnings. If the stock should rise to 40, the price-earnings ratio would be 20. Or if the stock drops to 12, the price-earnings ratio would be 6.

In Typical Manufacturing, which has no convertible common stock equivalents, the earnings per share were calculated at $3.16. If the stock were selling at 33, the price-earnings ratio would be 10.4. This is the basic figure that you should use in viewing the record of this stock over a period of years and in comparing the common stock of this company with other similar stocks.

46 $$\frac{\$33 \ \text{market price}}{\$\ 3.16 \ \text{earnings per share}} = \mathbf{10.4 : 1}$$ **or 10.4 times**

This means that Typical Manufacturing common stock is selling at approximately 10.4 times earnings.

Last year, Typical earned $2.77 per share. Let's say that its stock sold at the same price-earnings ratio then. This means that a share of Typical was selling for $28.80 or so, and anyone who bought Typical then would be satisfied now. Just remember, in the real world, investors can never be certain that any stock will keep its same price-earnings ratio from year to year. The historical P/E multiple is a guide, not a guarantee.

In general, a high P/E multiple, when compared with other companies in the same industry, means that investors have confidence in the company's ability to produce higher profits in the future.

Statement of Changes in Shareholders' Equity

(dollars in thousands except per share amounts)

This statement analyzes the changes from year to year in each shareholder's equity account. From this statement we can see that during the year additional common stock was issued at a price above par. We can also see that Typical experienced a translation gain. The rest of the components of equity, with the exception of retained earnings which we discuss below, remained the same.

Just as the income statement reflects the payoff for shareholders, retained earnings reflects the payoff for the company itself. It shows how much money the company has plowed back into itself for new growth. The Statement of Changes shows that retained earnings increase by net income less dividends on preferred and common stock. Since we have already analyzed net income, we will now analyze dividends.

Dividends

Dividends on common stock vary with the profitability of the company. Common shareholders were paid $18,000 in dividends this year. Since we know from the balance sheet that Typical has 14,999,000 shares outstanding, the first thing we can learn here is what may be the most important point to some potential investors – dividends per share.

$$\frac{\$18{,}000{,}000 \text{ common stock dividends}}{14{,}999{,}000 \text{ shares}} = \$1.20 \text{ a share}$$

Once we know the amount of dividends per share, we can easily discover the dividend *payout ratio*. This is simply the percentage of net earnings per share that is paid to shareholders.

$$46 \quad \frac{\$1.20 \text{ dividend per common share}}{\$3.16 \text{ earnings per common share}} = 38\%$$

Of course the dividends on the $5.83 preferred stock will not change from year to year. The word *cumulative* in the balance statement description tells us that *if* Typical's management someday didn't pay a dividend on its preferred stock, then the $5.83 payment for that year would accumulate. It would have to be paid to preferred shareholders before any dividends could ever be declared again on the common stock.

That's why preferred stock is called preferred. It gets at any dividend money first. We've already talked about convertible bonds and convertible preferred stock. Right now we're not interested in that aspect, because Typical Manufacturing doesn't have any convertible securities outstanding. Chances are its 60,000 shares of preferred stock, with a par value of $100 each, were issued to family members of Mr. Isaiah Typical, who founded the company back in 1923. When he took Typical public, he didn't keep any of the common stock. In those days, the guaranteed $5.83 dividend was more important to Isaiah. He was not interested in taking any more chances on Typical.

During the year, Typical has added $29,400 to its retained earnings. Even if Typical has some lean years in the future, it has plenty of retained earnings from which to keep on declaring those $5.83 dividends on the preferred stock and $1.20 dividends on the common stock.

There is one danger in having a lot of retained earnings. It could attract another company–Shark Fast Food's & Electronics, for instance–to buy up Typical's common stock, to gain enough control to vote out the current management. Then Shark might merge Typical into itself. Where would Shark get the money to buy Typical stock? By issuing new shares of its own stock, perhaps. And where would Shark get the money to pay the dividends on all that new stock of its own? From Typical's retained earnings. So Typical's management has the obligation to its shareholders to make sure that its retained earnings are put to work to increase the total earnings per share of the shareholders. Or else the shareholders might cooperate with Shark if and when it makes a raid.

25	**Retained earnings**	**$249,000**

Return on Equity

Seeing how hard money works, of course, is one of the most popular measures that investors use to come up with individual judgments on how much they think a certain stock ought to be worth. The market itself–the sum of all buyers and sellers– makes the real decision. But the investors often try to make their own, in order to decide whether they want to invest at the market's price or wait. Most investors look for Typical's return on equity, which shows how hard shareholders' equity in Typical is working. In order to find Typical's current return on equity, we look at the balance sheet and take the common shareholders' equity for last year–not the current year– and then we see how much Typical made this year on it. We use only the amount of net profit after the dividends have been paid on the preferred stock. For Typical Manufacturing, that means $47,750 net profit minus $350. Here is what we get:

$$\frac{\text{\$47.750 net income} - \text{\$350 preferred stock dividend}}{\text{\$305.600 last year's stockholders' equity} - \text{\$6,000 preferred stock value}}$$

$$\frac{\$\ 47{,}400}{\$299{,}600} = \begin{array}{c}15.8\%\\ \text{return on equity}\end{array}$$

For every dollar of shareholder's equity, Typical made more than 15¢. Is that good? Well, 15.8¢ on the dollar is better than Typical could have done by going out of business, taking its shareholders' equity and putting that $299,600 in the bank. So Typical obviously is better off in its own line of work. When we consider putting our money to work in Typical's stock, we should compare Typical's 15.8¢ not only to whatever Typical's business competitors make, but to Typical's investment competitors for our money. For instance, the latest available average rate for all U.S. industry, according to the U.S. Federal Trade Commission, was 16¢.

Just remember, that 15.8¢ is what Typical itself makes on the dollar. By no means is it what you will make in dividends on Typical's stock. What that return on equity really tells you is whether Typical Manufacturing is relatively attractive as an enterprise. You can only hope that this attractiveness might be translated into demand for Typical stock, and reflected in its price.

Many analysts also like to see a company's annual return on the total capital available to the company. To get this figure, we use all the equity, plus all available borrowed funds. This becomes the total capital available. And for the total return on this figure we use net income before income taxes and interest charges. This gives us a bigger capital base and a larger income figure. As shareholders, however, what we're most interested in is how hard our own share of the company is working. And that's why we are more interested in return on equity.

Statement of Cash Flows

One more statement needs to be analyzed in order to get the full picture of Typical's financial status. The Statement of Cash Flows examines the changes in cash resulting from business activities. Cash flow analysis is necessary in order to make proper investing decisions as well as to maintain operations. Cash flows, although related to net income, are not equivalent. This is because of the accrual concept of accounting. Generally, under accrual accounting, a transaction is recognized on the income statement when the earnings process has been completed or an expense has been incurred. This does not necessarily coincide with the time that cash is exchanged. For example, cash received from merchandise sales often lags behind the time when goods are delivered to customers. However, the sale is recorded on the income statement when the goods are shipped.

Cash flows are separated by business activity. The business activity classifications presented on the statement include investing activities, financing activities and operating activities. First, we will discuss financing and investing activities. Operating activities basically include all activities not classified as either financing or investing activities.

Financing activities include those activities relating to the generation and repayment of funds provided by creditors and investors. These activities include the issuance of debt or equity securities and the repayment of debt and distribution of dividends. Investing activities include those activities relating to asset acquisition or disposal.

Operating activities involve activities relating to the production and delivery of goods and services. They reflect the cash effects of transactions which are included in the determination of net income. Since many items enter into the determination of net income, the indirect method is used to determine the cash provided by or used for operating activities. This method requires adjusting net income to reconcile it to cash flows from operating activities. Common examples of cash flows from operating activities are interest received and paid, dividends received, salary, insurance and tax payments.

Qualifying and Certifying

Watch Those Footnotes

The annual reports of many companies contain the statement: "The accompanying footnotes are an integral part of the financial statements." The reason is that the financial reports themselves are kept concise and condensed. Therefore, any explanatory matter that cannot readily be abbreviated is set out in greater detail in footnotes.

Some examples of appropriate footnotes are:

Description of the company's *policy* for depreciation, amortization, consolidation, foreign currency translation and earnings per share.

Inventory valuation method. This footnote indicates whether inventories shown on the balance sheet or used in determining the cost of goods sold on the income statement are valued on a last in, first out (LIFO) basis or a first in, first out (FIFO) basis. Last in, first out means that the costs on the income statement reflect the actual cost of inventories purchased most recently. First in, first out means the income statement reflects the cost of the oldest inventories. This is an extremely important consideration because a LIFO valuation reflects current costs and does not overstate profits during inflationary times while a FIFO valuation does.

Changes in accounting policy as a result of new accounting rules.

Non-recurring items such as pension plan terminations or sales of significant business units.

Employment contracts, profit sharing, pension and retirement plans.

Details of stock options granted to officers and employees.

Long-term leases. Companies which usually lease a considerable amount of selling space must show their lease liabilities on a per year basis for the next several years and their total lease liabilities over a longer period of time.

Details relating to issuance and maturities of long-term debt.

Contingent liabilities representing claims or lawsuits pending.

Commitments relating to contracts in force that will affect future periods.

Inflation accounting adjustments. Certain companies must show the impact of changing prices on their financial position by adjusting items that appear on the balance sheet and the income statement for current costs and the Consumer Price Index. FASB Statement Number 89 spells out the requirements for presenting inflation-adjusted financial data.

Separate breakdowns of sales and gross profits must be shown for each line of business that accounts for more than 20% of a company's sales. Multinational corporations must also show sales and gross income on a geographic basis by country.

Most people do not like to read footnotes because they may be complicated and are almost always hard to read. That's too bad, because footnotes are very informative. Even if they don't reveal that the corporation has been forced into bankruptcy, footnotes can still reveal many fascinating sidelights on the financial story.

Independent Audits

The certificate from the independent auditors, which is printed in the report, says, first, that the auditing steps taken in the process of verification of the account meet the accounting world's approved standards of practice, and second, that the financial statements in the report have been prepared in conformity with generally accepted accounting principles.

As a result, when the annual report contains financial statements that have the stamp of approval from independent auditors, you have an assurance that the figures can be relied upon as having been fairly presented.

However, if the independent accountants' opinion contains words such as "except for", or "subject to", the reader should investigate the reason behind such qualifications. Often the answer can be found by reading the footnotes that pertain to the matter. They are usually referred to in the auditor's opinion.

The Long View

We cannot emphasize too strongly that company records, in order to be very useful, must be compared. We can compare them to other company records, to industry averages or even to broader economic factors, if we want. But most of all, we can compare one company's annual activities to the same firm's results from other years.

This used to be done by keeping a file of old annual reports. Now many corporations include a ten-year summary in their financial highlights each year. This provides the investing public with information about a decade of performance. That is why Typical Manufacturing included a ten-year summary in its annual report. It's not a part of the statements vouched for by the auditors, but it is there for you to see. A ten-year summary can show you:

- The trend and consistency of sales;
- The trend of earnings, particularly in relation to sales and the economy;
- The trend of net earnings as a percentage of sales;
- The trend of return on equity;
- Net earnings per share of common; and
- Dividends, and dividend policy.

Other companies may include changes in net worth, book value per share, capital expenditures for plant and machinery, long-term debt, capital stock changes by way of stock dividends and splits, number of employees, number of shareholders, number of outlets, and where appropriate, information on foreign subsidiaries and the extent to which foreign operations have been embodied in the financial report.

All of this is really important because of one central point: You are not only trying to find out how Typical is doing *now*. You want to predict how Typical *will* do—and how its stock will perform.

Ten-Year Financial Summary

	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980
Net Sales	$765,000	$725,000	$690,000	$660,000	$600,000	$520,000	$500,000	$450,000	$350,000	$300,000
Income—before income taxes and extraordinary loss	94,196	66,750	59,750	54,750	50,400	42,000	45,800	40,500	34,350	29,500
Extraordinary loss	(5,000)	–	–	–	–	–	–	–	–	–
Net profit for year	47,750	40,500	37,700	33,650	29,850	27,300	30,360	25,975	21,000	18,100
Earnings per share before extraordinary loss	3.49	2.77	2.57	2.28	2.00	1.83	2.20	1.93	1.69	1.43
Earnings per share after extraordinary loss	3.16	2.77	2.57	2.28	2.00	1.83	2.20	1.93	1.69	1.43
Dividend per share	1.20	1.20	1.20	1.00	1.00	1.00	1.00	.80	.80	.80
Net working capital	230,000	199,000	218,000	223,000	211,000	178,000	136,000	111,000	86,000	96,000
Net plant and equipment	260,000	249,600	205,000	188,000	184,300	187,500	161,600	125,600	92,500	87,600
Long-term debt	130,000	136,000	136,000	–	–	–	–	–	–	–
Preferred stock	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Common stock and surplus	340,000	299,600	275,800	254,700	238,100	220,500	203,250	166,000	133,800	128,000
Book value per share	22.53	20.53	18.39	16.98	15.87	14.70	13.55	11.07	8.92	8.53

Note: All data in thousands except per share figures.

Selecting Stocks

From the items we've studied in this booklet, Typical Manufacturing appears to be a healthy concern. Which should make Board Chairman Patience Typical, old Isaiah Typical's daughter, and her four nieces, who own most of the shares, happy. But it makes us rather sad, since Typical is fictional, and we can't offer you shares of its stock. When you decide to invest money in real stocks, please remember this:

Selecting common stocks for investment requires careful study of factors other than those we can learn from financial statements. The economics of the country and the particular industry must be considered. The management of the company must be studied and its plans for the future assessed. Information about these other things is rarely in the financial report. These other facts must be gleaned from the press or the financial services or supplied by some research organization. Merrill Lynch's Global Securities Research and Economics Group stands ready to help you get the available facts you need to be an intelligent investor. Ask any Financial Consultant to put Merrill Lynch to work for you.

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VALUATION TECHNIQUES

One of the entrepreneur's critical tasks is determining value. This is important not only for the individual about to purchase a company, but also for the entrepreneur who is starting a firm, and is attempting to estimate the value the business may have in the future. Finally, understanding value is a key step for the entrepreneur about to harvest a venture, either through sale or taking the business public.

Financial theorists have developed many techniques which can be used to evaluate a going concern. Of course, for a large public company, one could simply take the market value of the equity. For a going concern with a long history of audited financials, earnings and cash flow projections are possible. But the valuation of a small, privately held business is difficult and uncertain at best.

This note will briefly outline some of the more widely used valuation approaches, including:

- Asset valuations
- Earnings valuations
- Cash flow valuations

ASSET VALUATIONS

One approach to valuation is to look at the underlying worth of the assets of the business. Asset valuation is one measure of the investor's exposure to risk. If within the company there are assets whose market value approximates the price of the company plus its liabilities, the immediate downside risk is low. In some instances an increase in the value of the assets of a company may represent a major portion of the investor's anticipated return. The various approaches to asset valuation include:

This note was prepared by Michael J. Roberts, Associates Fellow, under the supervision of Professor Howard H. Stevenson, as the basis for class discussion. It is based, in part, on the note "Evaluating a Going Concern" in New Business Ventures and the Entrepreneur, by Patrick Liles (Richard D. Irwin, 1974).

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Book Value

The most obvious asset value that a prospective purchaser can examine is the book value. In a situation with many variables and unknowns it provides a tangible starting point. However, it must be remembered that it is only a starting point. The accounting practices of the company as well as other things can have a significant effect on the firm's book value. For example, if the reserve for losses on accounts receivable is too low for the business it will inflate book value and vice versa. Similarly, treatment of asset accounts such as research and development costs, patents, organization expense, and so on, can vary widely. Nevertheless, the book value of a firm provides a point of departure when considering asset valuation.

Adjusted Book Value

An obvious refinement of stated book value is to adjust for large discrepancies between the stated book and actual market value of tangible assets, such as buildings and equipment which have been depreciated far below their market value, or land which has substantially appreciated above its book value which stands at the original cost. An adjustment would probably also reduce the book value of intangible assets to zero unless they, like the tangible assets, also have a market value. The figure resulting from these adjustments should more accurately represent the value of the company's assets.

Liquidation Value

One step beyond adjusted book value is to consider the net cash amount which could be realized if the assets of the company were disposed of in a "quick sale" and all liabilities of the company paid off or otherwise settled. This value would take into account that many assets, especially inventory and real estate, would not realize as much as they would were the company to continue as a going concern or were the sale made more deliberately. Also, calculation of a liquidation value would make allowances for the various costs of carrying out a liquidation sale.

The liquidation value, it should be noted, is only an indication of what might be realized if the firm were liquidated immediately. Should the company continue its operations and encounter difficulties, most likely a subsequent liquidation would yield significantly less than the liquidation value calculated for the company in its current condition.

The liquidation value of a company is not usually of importance to a buyer who is interested in the maintenance of a going concern. One would assume, however, that the liquidation value would represent some kind of a floor below which the seller would be unwilling to sell because he should be able to liquidate the company himself.

Replacement Value

The current cost of reproducing the tangible assets of a business can at times be significant in that starting a new company may be an alternative means of getting into the business. It sometimes happens that the market value for existing facilities is considerably less than the cost of building a plant and purchasing equivalent equipment from other sources. In most instances, however, this calculation is used more as a reference point than as a seriously considered possibility.

EARNINGS VALUATIONS

A second common approach to an investor's valuation of a company is to capitalize earnings. This involves multiplying an earnings figure by a capitalization factor or price earnings ratio. Of course, this raises two questions: (1) Which earnings? and (2) What factor?

Earnings Figure

One can use three basic kinds of earnings:

- Historical Earnings: The logic behind looking at historical earnings is that they can be used to reflect the company's future performance; there is no logic in evaluating a company on the basis of what it has earned in the past. As will be discussed below, however, historical earnings should be given careful consideration in their use as a guide to the future. They should provide concrete realism to what otherwise would be just a best guess.

  Historical earnings per se can rarely be used directly and an extrapolation of these figures to obtain a picture of the future must be considered a rough, and frequently a poor, approximation. To gain the benefit from the information in a company's financial history of past operations, it is necessary to study each of the cost and income elements, their interrelationships, and their trends.

  In pursuit of this study it is essential that random and nonrecurring items be factored out. Expenses should be reviewed to determine that they are normal and do not contain extraordinary expenses nor omit some of the unusual expenses of operations. For example, inordinately low maintenance and repair charges over a period of years may mean that extraordinary expenses will be incurred in the future for deferred maintenance. Similarly, nonrecurring "windfall" sales will distort the normal picture.

  In a small, closely held company particular attention should be given to the salaries of owner-managers and members of their families. If these salaries have been unreasonably high or low in light of the nature and size of the business and the duties performed, adjustment of the earnings is required. An assessment should also be made of the depreciation rates to determine their validity and to estimate the need for any earnings adjustments for the future. The amount of federal and state income taxes paid in the past may influence future earnings because of carryover and carryback provisions in the tax laws.

- Future Earnings Under Present Ownership: How much and in what ways income and costs are calculated for future operations depends to a large degree upon the operating policies and strategies of management. The existing or future owners' approach will be influenced by a host of factors: management ability, economic and noneconomic objectives, and so on. In calculating future earnings for a company these kinds of things must be considered and weighed.

  A calculation of value based upon the future earnings of the company should provide an indication of the current economic value of the company to the current owner. To an investor, including the present owner as an investor, this figure should provide an economic basis for that individual's continued activity and investment in the company. (As we shall discuss later, there is usually more to a potential seller's position than just an economic analysis of his/her own future as an investor.) To an investor who anticipates a change in management with his investment, a calculation of value based upon earnings from the current owner's continuing with the company is not a meaningful assessment of the value of the company to the investor.

- Future Earnings Under New Ownership: These are the earnings figures which are relevant to the investor who is investing in the turnaround of a dying company or in the reinvigoration of a stagnant one. The basis for the figures--the assumptions, relationships between costs and income, and so on--will probably show significant variance from the company's past performance. Plans may be to change substantially the nature of the business. The evaluation and investment decision may also involve large capital investments in addition to the purchase price of the company.

  It is the future earnings of the new operation of the business which are helpful in determining the value of the company to the entrepreneur as these are the earnings which will influence the economic return. Most likely these kinds of projections will have large elements of uncertainty, and one may find it helpful to consider high, low, and most likely outcomes for financial performance.

In addition to deciding on an earnings period upon which to focus, there is also the issue of "what earnings?" That is, profit before tax, profit after tax, operating income or earnings before interest and taxes (EBIT). Most valuations look at earnings after tax (but before extraordinary items). Of course, the most important rule is to be consistent: don't base a multiple on earnings after tax, and then apply that multiple to EBIT. Beyond this, the most important factor to consider is precisely what you are trying to measure in your valuation. A strong argument can be made for using EBIT. This measures the earning power and value of the basic, underlying business, without the effects of financing. This is a particularly valuable approach if the entrepreneur is contemplating using a different financial structure for the business in the future.

Price-earnings Multiple

Next, we have the issue of what multiple to use. Assuming that the investor's primary return is anticipated to result from sale of the stock at some future date, the investor should then ask the question: Given the anticipated pattern of earnings of this company, the nature of the industry, the likely state of the stock market, and so on, what will the public or some acquisitive conglomerate be willing to pay me for my holdings? In terms of some multiple of earnings, what prices are paid for stock with similar records and histories? To estimate with any degree of confidence the future multiple of a small company is indeed a difficult task. In many instances working with a range of values might be more helpful. This great uncertainty for a potential investor in estimating both a small company's future earnings and future market conditions for the stock of that company in part explains why his return on investment requirements for a new venture investment are so high.

Again, it is important to remember to be consistent: always derive the multiple as a function of the same base you wish to apply it to: profit after tax, EBIT or whatever.

Up until this point, we have been discussing methods of arriving at a value for the business as a whole. While the entrepreneur is naturally concerned with this issue, s/he is also concerned with the valuation of his/her piece of the business.

Residual pricing is a technique which addresses this issue. Essentially, residual pricing involves:

- Determining the future value of a company in year n through one of the methods described above.
- Applying a target rate of return to the amount of money raised via the initial sale of equity.
- Using this information to develop a point of view on how much equity the entrepreneur must give up in order to get the equity financing required.
- The "residual," or remaining equity can be retained by the entrepreneur as his return.

For example, if a company is projected to have earnings of $100,000 in year 5, and if (after some analysis) it seems that the appropriate P/E for the company is 10, then we can assume that the company will be worth $1,000,000 in year 5. Now if we know that the entrepreneur needs to raise $50,000 from a venture capital firm (in equity) to start the business, and if the venture firm requires a 50% annual return on that money then that $50,000 needs to be worth $\$50,000 \times (1 + 50\%)^5 = \$380,000$. So in theory at least, the entrepreneur would have to give 38% of the equity to the venture firm in order to raise this money.

CASH FLOW VALUATIONS

Traditional approaches to evaluating a company have placed the principal emphasis upon earnings. Assuming that the company will continue in operation, the earnings method posits that a company is worth what it can be expected to earn.

But this approach is only partially useful for the individual entrepreneur who is trying to decide whether or not to invest in a business. Again, the entrepreneur must distinguish between the value of the business as a whole and the portion of that value which can be appropriated for himself or herself. The entrepreneur must address the need to acquire resources from others, and must understand that s/he will have to give up a portion of the value of the business in order to attract these resources. In addition to personal or subjective reasons for buying a business, the entrepreneur's chief criterion for appraisal will be return on investment. Because an entrepreneur's dollar investment is sometimes very small, it may be useful to think of return more as a return on his or her time, than a return on his or her dollar investment. To calculate the latter return, the entrepreneur must calculate his or her individual prospective cash flow from the business. It is the entrepreneur's return from the business, rather than the return inherent in the business itself, which is important. As we shall see, there are several different types of cash flow which can accrue to the entrepreneur. They include:

Operating Cash Flows

Cash or value which flows out of the business during its operations. This includes:

- Perquisites: Perquisites are not literally cash at all, but can be considered cash equivalents in terms of their direct benefits. Business-related expenses charged to the company (e.g., company car and country club memberships) are received by the individual and are not taxed at either the corporate or personal level. Their disadvantage is that they are limited in absolute dollar terms.

- Return of Capital via Debt Repayment: This class of cash flow is a tax-free event at both the corporate and personal level. An additional advantage to this type of flow is that it can occur while enabling the entrepreneur still to maintain a continuous equity interest in the company. Its disadvantage is, of course, that it requires him/her to make the original investment.

- Interest and Salary: Both of these items constitute personal income and are taxed as such at the personal level. However, no tax is imposed at the corporate level.

- Dividends: As a means of getting cash from a venture, dividends are the least desirable as the resulting cash flow has undergone the greatest net shrinkage. Dividends incur taxes first at the corporate level (at the 15% or 34% rate as income accrues to the corporation) and then again at the personal level (at the personal income tax rate as the dividend payment accrues to the individual). At the maximum corporate income tax rate of 34% and the maximum personal income tax rate of 28%, we can see that this double taxation can reduce $1.00 of pretax corporate profit to $0.48 after-tax cash flow to the individual.

Terminal Value

Another source of cash is the money the entrepreneur pulls out of the business when the venture is harvested. Again, there are several elements to this aspect of return.

- Return of Capital via Sale: If the owner/manager sells all or part of the business, the amount he receives up to the amount of his cost basis is a tax-free event at both the corporate and personal level. Since a sale of his or her interest is involved, however, it is evident that, unlike a return of capital via debt repayment, the owner/manager does not maintain his or her continuous equity interest in the concern. Also, like a cash flow based on debt retirement, an original investment is necessary.

- Capital Gain via Sale: When capital gains are realized in addition to the return of capital, no tax is imposed at the corporate level, and the tax rate at the personal level is less than for regular income.

Tax Benefits

While not precisely cash flow, tax benefits can enhance cash flow from other sources. For example, if a start-up has operating losses for several years, and if these losses can be passed through to the individual, then they create value by sheltering other income. Because entrepreneurs are often in a low-income phase when starting a business, these tax benefits may be of limited value to them. However, if properly structured, these tax benefits can provide substantial value to investors. In a situation when the structure and form of the organization (i.e., a corporation, does not permit the losses to flow through to the individual, these losses can be used to offset income of the corporation in prior or future years.

The entrepreneur must also take into account his negative cash flows. Three types of negative cash flows are particularly important.

- Cash portion of the purchase price.
- Deficient salary.
- Additional equity capital.

Frequently the most critical aspect of the cash portion of the purchase price is that it must be small enough for the entrepreneur to be able to pay it in the first place. In this kind of situation the seller finances the purchase of his company by taking part of the purchase price in the form of a note. The seller then receives cash later on from future earnings of the company or from its assets. Of course, the less cash s/he is required to put up the more cash the entrepreneur has available for other uses and the greater the opportunity he has to produce a high ROI. On the other hand, too much initial debt may hamstring a company from the start, thereby hurting the venture's subsequent financial performance and the entrepreneur's principal source of return--be it the cash withdrawn from the company or the funds received from eventual sale of the company.

The significance to the entrepreneur of a negative cash flow based on a deficient salary is clear--a lower income for personal use than could be obtained elsewhere. In addition, there is the effect that these early negative flows may have on the entrepreneur: faced with an immediate equity requirement for working capital or fixed assets, the owner/manager may be forced to seek outside investors, thereby diluting his or her future value in the business and also introducing the possibility of divergent goals in the financial and other aspects of the company's operations.

At this point in our analysis it will appear obvious to some that the next step for the entrepreneur is to find the present value of the cash flow he predicts for the venture. In other words, discounting the value of future cash flows to arrive at a value of the venture in terms of cash today. We shall see, however, that in many respects this approach raises more questions than it answers and therefore its usefulness to the analysis is questionable at best.

The essence of the problem is that present value is basically an investment concept utilizing ROI to determine the allocation of a limited supply of funds among alternatives, whereas the entrepreneur is faced basically with a personal situation where return on both investment and time are key. In addition, the entrepreneur may have made a considerable investment in generating the particular option, and it is difficult to weigh this tangible opportunity against unknown options. Because the entrepreneur does not have a portfolio of well-defined opportunities to choose from he needs to define some standard of comparison. This is typically the salary that could be obtained by working.

In an investment analysis utilizing present value the discount rate is selected to reflect uncertainty associated with cash flows; the higher the uncertainty, the higher the discount rate and consequently the lower the present value of the cash flows. In the corporate context there is usually a minimal ROI criterion for noncritical investments to keep the ROI greater than the firm's cost of capital.

For the individual entrepreneur, however, the decision to buy or to start a company is fundamentally a subjective one. Return on investment and time for this kind of decisions is measured not only in terms of dollars, but also in terms of what s/he will be doing, who his or her associates will be, how much time and energy will have to be expended, and what life style will result. Different kinds of ventures present different kinds of return on time. As cash to the entrepreneur is an important enabling factor for some of the things the entrepreneur is seeking, it is important that s/he calculate what these cash flows might be and when they can be expected. However, because decisions affecting cash flow also affect the other returns to the entrepreneur and because these other returns may be at least as important as the financial returns, a present value calculation often is not the most important measure.

In thinking about the attractiveness of a particular opportunity an entrepreneur rarely has similar situations as alternatives to compare. More than likely the decision is either to go ahead with a venture or to stay where s/he is until something else comes along. Perhaps the most useful way to think of this position is to imagine an individual looking down a corridor which will provide a range of opportunities--opportunities to achieve different levels of financial and other rewards with their accompanying risks and sacrifices. Financial theorists, for instance, have recently begun to study investments in terms of their ability to generate a future stream of growth opportunities.

SUMMARY

The previous discussion has outlined a variety of different approaches to the valuation of a firm. It is important to remember that no single approach will ever give the "right" answer. To a large extent, the appropriateness of any method of evaluation depends upon the perspective of the evaluator. However, both in this course and in "real life" one must come to some point of view on the worth of a firm, no matter how scant the data. This is very important, even if the value is only a preliminary one, because it permits the individual to delve further into the issues at hand.

Nonetheless, the true purpose of the analysis is not to arrive at "the answer" but to,

- identify critical assumptions;
- evaluate the interrelationships among elements of the situation to determine which aspects are crucial;
- develop realistic scenarios, not a best case, worst case analysis;
- surface and understand potential outcomes and consequences, both good and bad; and
- examine the manner in which the value of the business is being carved up to satisfy the needs of prospective suppliers of resources.

No single valuation captures the true value of any firm. Rather, its value is a function of the individual's perception of opportunity, risk, the nature of financial resources available to the purchaser, the prospective strategy for operation, the time horizon for analysis, alternatives available given the time and money invested and prospective methods of harvesting. Price and value are not equivalent. If the entrepreneur pays what the business is worth, he has not appropriated any value for himself. The difference is determined by information, market behavior, pressures forcing either purchase or sale, and negotiating skills.

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VALUATION TECHNIQUES

One of the entrepreneur's critical tasks is determining value. This is important not only for the individual about to purchase a company, but also for the entrepreneur who is starting a firm, and is attempting to estimate the value the business may have in the future. Finally, understanding value is a key step for the entrepreneur about to harvest a venture, either through sale or taking the business public.

Financial theorists have developed many techniques which can be used to evaluate a going concern. Of course, for a large public company, one could simply take the market value of the equity. For a going concern with a long history of audited financials, earnings and cash flow projections are possible. But the valuation of a small, privately held business is difficult and uncertain at best.

This note will briefly outline some of the more widely used valuation approaches, including:

- Asset valuations
- Earnings valuations
- Cash flow valuations

ASSET VALUATIONS

One approach to valuation is to look at the underlying worth of the assets of the business. Asset valuation is one measure of the investor's exposure to risk. If within the company there are assets whose market value approximates the price of the company plus its liabilities, the immediate downside risk is low. In some instances an increase in the value of the assets of a company may represent a major portion of the investor's anticipated return. The various approaches to asset valuation include:

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Liquidation Value

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One can use three basic kinds of earnings:

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Terminal Value

Another source of cash is the money the entrepreneur pulls out of the business when the venture is harvested. Again, there are several elements to this aspect of return.

- Return of Capital via Sale: If the owner/manager sells all or part of the business, the amount he receives up to the amount of his cost basis is a tax-free event at both the corporate and personal level. Since a sale of his or her interest is involved, however, it is evident that, unlike a return of capital via debt repayment, the owner/manager does not maintain his or her continuous equity interest in the concern. Also, like a cash flow based on debt retirement, an original investment is necessary.

- Capital Gain via Sale: When capital gains are realized in addition to the return of capital, no tax is imposed at the corporate level, and the tax rate at the personal level is less than for regular income.

Tax Benefits

While not precisely cash flow, tax benefits can enhance cash flow from other sources. For example, if a start-up has operating losses for several years, and if these losses can be passed through to the individual, then they create value by sheltering other income. Because entrepreneurs are often in a low-income phase when starting a business, these tax benefits may be of limited value to them. However, if properly structured, these tax benefits can provide substantial value to investors. In a situation when the structure and form of the organization (i.e., a corporation, does not permit the losses to flow through to the individual, these losses can be used to offset income of the corporation in prior or future years.

The entrepreneur must also take into account his negative cash flows. Three types of negative cash flows are particularly important.

- Cash portion of the purchase price.
- Deficient salary.
- Additional equity capital.

Frequently the most critical aspect of the cash portion of the purchase price is that it must be small enough for the entrepreneur to be able to pay it in the first place. In this kind of situation the seller finances the purchase of his company by taking part of the purchase price in the form of a note. The seller then receives cash later on from future earnings of the company or from its assets. Of course, the less cash s/he is required to put up the more cash the entrepreneur has available for other uses and the greater the opportunity he has to produce a high ROI. On the other hand, too much initial debt may hamstring a company from the start, thereby hurting the venture's subsequent financial performance and the entrepreneur's principal source of return--be it the cash withdrawn from the company or the funds received from eventual sale of the company.

The significance to the entrepreneur of a negative cash flow based on a deficient salary is clear--a lower income for personal use than could be obtained elsewhere. In addition, there is the effect that these early negative flows may have on the entrepreneur: faced with an immediate equity requirement for working capital or fixed assets, the owner/manager may be forced to seek outside investors, thereby diluting his or her future value in the business and also introducing the possibility of divergent goals in the financial and other aspects of the company's operations.

At this point in our analysis it will appear obvious to some that the next step for the entrepreneur is to find the present value of the cash flow he predicts for the venture. In other words, discounting the value of future cash flows to arrive at a value of the venture in terms of cash today. We shall see, however, that in many respects this approach raises more questions than it answers and therefore its usefulness to the analysis is questionable at best.

The essence of the problem is that present value is basically an investment concept utilizing ROI to determine the allocation of a limited supply of funds among alternatives, whereas the entrepreneur is faced basically with a personal situation where return on both investment and time are key. In addition, the entrepreneur may have made a considerable investment in generating the particular option, and it is difficult to weigh this tangible opportunity against unknown options. Because the entrepreneur does not have a portfolio of well-defined opportunities to choose from he needs to define some standard of comparison. This is typically the salary that could be obtained by working.

In an investment analysis utilizing present value the discount rate is selected to reflect uncertainty associated with cash flows; the higher the uncertainty, the higher the discount rate and consequently the lower the present value of the cash flows. In the corporate context there is usually a minimal ROI criterion for noncritical investments to keep the ROI greater than the firm's cost of capital.

For the individual entrepreneur, however, the decision to buy or to start a company is fundamentally a subjective one. Return on investment and time for this kind of decisions is measured not only in terms of dollars, but also in terms of what s/he will be doing, who his or her associates will be, how much time and energy will have to be expended, and what life style will result. Different kinds of ventures present different kinds of return on time. As cash to the entrepreneur is an important enabling factor for some of the things the entrepreneur is seeking, it is important that s/he calculate what these cash flows might be and when they can be expected. However, because decisions affecting cash flow also affect the other returns to the entrepreneur and because these other returns may be at least as important as the financial returns, a present value calculation often is not the most important measure.

In thinking about the attractiveness of a particular opportunity an entrepreneur rarely has similar situations as alternatives to compare. More than likely the decision is either to go ahead with a venture or to stay where s/he is until something else comes along. Perhaps the most useful way to think of this position is to imagine an individual looking down a corridor which will provide a range of opportunities--opportunities to achieve different levels of financial and other rewards with their accompanying risks and sacrifices. Financial theorists, for instance, have recently begun to study investments in terms of their ability to generate a future stream of growth opportunities.

SUMMARY

The previous discussion has outlined a variety of different approaches to the valuation of a firm. It is important to remember that no single approach will ever give the "right" answer. To a large extent, the appropriateness of any method of evaluation depends upon the perspective of the evaluator. However, both in this course and in "real life" one must come to some point of view on the worth of a firm, no matter how scant the data. This is very important, even if the value is only a preliminary one, because it permits the individual to delve further into the issues at hand.

Nonetheless, the true purpose of the analysis is not to arrive at "the answer" but to,

- identify critical assumptions;
- evaluate the interrelationships among elements of the situation to determine which aspects are crucial;
- develop realistic scenarios, not a best case, worst case analysis;
- surface and understand potential outcomes and consequences, both good and bad; and
- examine the manner in which the value of the business is being carved up to satisfy the needs of prospective suppliers of resources.

No single valuation captures the true value of any firm. Rather, its value is a function of the individual's perception of opportunity, risk, the nature of financial resources available to the purchaser, the prospective strategy for operation, the time horizon for analysis, alternatives available given the time and money invested and prospective methods of harvesting. Price and value are not equivalent. If the entrepreneur pays what the business is worth, he has not appropriated any value for himself. The difference is determined by information, market behavior, pressures forcing either purchase or sale, and negotiating skills.

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WHARTON REPROGRAPHICS

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How Much Money Does Your New Venture Need?

James McNeill Stancill

Every entrepreneur planning a new venture faces the same dilemma: determining how much money is necessary to start the business. More often than not, entrepreneurs estimate on the low side. They may simply not allow for unexpected expenses and lower-than-predicted sales.

It is impossible to know exactly how much a new business will need during its first five years, but it is possible to come up with realistic estimates. These come from the financial forecast: the income statement, the balance sheet, and, most important, the cash flow statement.

This reading shows how to calculate the new venture's capital requirements through such financial forecasting. It also shows how financial forecasting provides the basis for determining equity investments.

Thanks to various computer spreadsheet programs, calculations associated with even the most detailed forecasting are fairly simple. What used to require days or weeks now takes only minutes or hours. Such programs enable entrepreneurs to use variables and test scenarios in ways that are impractical with conventional push-the-pencil methods. Such split-second calculating tools should not, of course, blind entrepreneurs to the logic of the numerical estimate and the cash flow model.

BEGINNING THE PROCESS

Simplicity is a virtue in presenting financial statements. Show items in summary form, but reserve all the details for separate schedules or footnotes attached to the financial statements. And make certain the statements conform with generally accepted format practices; creativity is welcome in many areas of business planning but not in financial statements.

For most manufacturing and many other start-ups, the form of the income statement will be like that shown in *Exhibit 1*. Each item has a footnote, which is included in "Notes to the financial statements." In these notes, you may refer the reader to another supporting schedule or you may simply explain the item. Each item has a separate footnote number. Having an explanation for each item is the most important aspect of an effective forecast. By explaining each item, you can defuse disputes about what value an item should have. If much uncertainty exists about an item, you can state in the footnote that the

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EXHIBIT 1

Sample Income Statement

Sales[1]	$ XXX
Less cost of goods sold[2]	XXX
Gross profit margin	XXX
Less general and administrative expenses[3]	XXX
Less selling expenses[4]	XXX
Operating income or loss	XXX
Less interest expense	XXX
Income before taxes	XXX
Less income taxes[5]	XXX
Net income or loss	XXX

Notes to the Financial Statements:

1. The sales forecasts shown here are based on market research, details of which are provided separately.
2. See the separate cost accounting module for details of how the cost of goods was arrived at [not shown in this reading].
3. See *Exhibit 3*.
4. See *Exhibit 5*.
5. This includes federal and corporate income taxes.

estimate is merely a guess but that the general order of magnitude is probably appropriate.

The financial forecast initially requires three estimates of sales for five years: a most likely, a most pessimistic, and a most optimistic estimate. Express this sales forecast in both number of items sold and dollars to account for factors that might affect the selling price. The sales forecasts should, of course, be accompanied by written justification of the sales estimates so that you can begin to project the required financial statements—first the income statement, then the balance sheet, and finally the cash flow statement.

A pro forma five-year income statement is, of course, only tentative. It is based on the assumption that the proposed output is feasible and that the level of production can be financed.

Before putting together the income statement, the forecaster must project which assets and liabilities will support the forecast sales level. This projection leads to the balance sheet estimate. For most new ventures, the balance sheet form shown in *Exhibit 2* is appropriate.

At this preliminary stage, it is important to avoid structuring the balance sheet—and the terms of the financing—by putting in the entire amount of outside investments or loans. Unless the whole proposal is to be syndicated, leave the decision about the allocation of debt and equity to the financiers. Thus the cash account, even if negative, becomes the balancing item on the balance sheet.

Most new ventures should do projections for five years—a monthly forecast for the first two or three years and quarterly or yearly projections for the remaining years. The time period each statement covers should be the same. That is, you shouldn't have monthly income statements and quarterly balance sheets for each period.

The monthly forecasts serve two purposes. First, they act as a form of budget, especially for general, administrative, and sales expenses. Second, they show the effect of quarterly tax payments on cash flow. The need to forecast for five years is dictated by the venture capitalist's desire to determine future earnings so as to arrive at a projected value for the business. This value, in turn, largely determines how much equity the venture capitalist will insist on for the capital investment.

GETTING TO COST OF GOODS SOLD

To illustrate the forecasting of capital requirements, I'll use the case of the McDonald Company, which was created to manufacture a water-purification unit for maritime and other uses. A colleague and I assumed that the company would start in January of year 1, would not produce any units in the first month, but would then produce 100 units a month in February through April and 300 a month for the next three months. It would then start dropping production in anticipation of seasonally lower sales and make a total of 2,100 units for the first year. The company did enough market research to warrant the sales forecast for the most-likely scenario. We assumed a selling price of $600 per unit, resulting in

EXHIBIT 2

Sample Balance Sheet

ASSETS		LIABILITIES	
Cash	$XXX	Accounts payable[11]	$XXX
Accounts receivable[6]	XXX	Accrued taxes[5]	XXX
Inventory[7]	XXX	Accrued expenses[12]	XXX
Other assets (prepaids)[8]	XXX	Current portion of long-term debt	XXX
Total current assets	$XXX	**Total current liabilities**	$XXX
Plant, property, and equipment at cost[9]	XXX		
Less reserve for depreciation[10]	XXX	Long-term equipment loans[13]	XXX
Net plant, property, and equipment	XXX	Equity	XXX
		Retained earnings or loss	XXX
Total assets	$XXX	**Total liabilities and capital**	$XXX

Notes to the Financial Statements:

5. This includes federal and corporate income taxes.
6. See *Exhibit 5* for the aging schedule.
7. For details of the finished-goods inventory, see *Exhibit 7*.
8. For the changes in prepaid assets, see separate schedule [not shown in this reading].
9. See separate schedule [not shown in this reading].
10. Generally, straight-line depreciation was used for equipment.
11. See separate schedule for details of changes in accounts payable [not shown in this reading].
12. See separate schedule for details of changes in accrued expenses [not shown in this reading].
13. The face amount of the loans is $140,000, payable in monthly installments of $5,023 for 36 months at an interest rate of 15%.

sales for year 1 of $1,020,000. We forecast that sales would rise in year 2 to $3 million and in year 3 to $3,780,000 and that the company would grow 25% in years 4 and 5.

After you have made the sales forecast, the next and most important item to estimate is the cost of goods sold. In service and wholesale businesses, making this estimate is not as complicated as in manufacturing. In service and wholesale, pricing, and thus sales, will probably be a function of labor or cost of materials; and a forecast of sales in units will easily produce a forecast of cost of goods sold.

For a manufacturing venture, simply using a percentage of sales, as you might when the business is reasonably well established, could lead to some serious errors. Unfortunately, the proper way is quite laborious and complicated, for it means using a separate forecast model. For the McDonald Company, we did an elaborate cost accounting module for all three scenarios, which turned out to be extraordinarily expensive in terms of time, even though we did it on a computer.

Remembering that the cost of goods sold consists of direct labor, cost of materials, and factory overhead, we handled the cost accounting model in the following way. Starting with a section on volume data, we forecast unit sales. Next, we made a decision on production, which began two months before sales were to commence. (This decision led to an ending inventory total that rose and fell as monthly sales went up and down.) In general, average wage rates and the time needed to assemble a unit were fairly easy to forecast.

Other components of the cost accounting model were raw materials, inventory, work-in-process inventory, finished-goods inventory, total inventory, factory overhead, work-in-process flow in units, and weighted-average cost per unit.

In some cases, estimating cost of goods sold as a percentage of sales, albeit a declining percentage, may be sufficient for the purpose at hand, particularly if you consider all the other variables. For example, after we made the cost accounting model for the McDonald Company, we calculated the cost of goods sold as a percentage of sales. Beginning at 53%, the percentage declined to about 40%. If it were possible to estimate the ratio of cost of goods sold to sales for, say, six-month intervals, the results would be approximately the same as what we got through the modeling. But for the shortcut approach, remember to have the necessary facts on hand to support the assumed percentages—such as efficiency of assembly, declining cost of raw materials because of increasing purchases, and spreading the factory overhead over the growing number of units purchased.

EXHIBIT 3

General and Administrative Expenses, Year 1, the McDonald Company

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JUL.
Consultant fees	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000
Depreciation	400	400	400	400	400	400	400
Insurance	200	200	200	200	200	200	200
Legal & acct.	500	500	500	500	500	500	500
Govt. lobbying	3,000	3,000	3,500	500	500	500	3,000
Office supplies	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Payroll taxes	840	1,060	1,260	1,260	1,260	1,260	1,380
Rent	400	400	400	400	400	400	400
Office salaries	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Officer salaries	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Telephone	800	800	800	1,200	1,200	1,200	1,500
Non-sales travel	2,000	2,000	2,000	2,000	1,400	1,400	1,000
Utilities	100	100	100	100	100	100	100
Start-up expense	12,000	3,000	8,000	0	0	0	12,000
Bad debts	0	0	0	1,800	5,400	5,400	5,400
Totals	$28,040	$19,260	$24,960	$16,160	$19,160	$19,160	$19,580

KEY EXPENSES

Estimate the depreciation expenses that are assumed to be included in the cost of goods sold so that this amount can be removed when you are compiling the cash flow statement. (To calculate taxable profit or loss, you must include the depreciation expense in the income statement; you can show it as a separate item.)

General and administrative expense (G&A) is the next income statement item to forecast. Since sales are increasing over the five-year planning horizon and G&A is mostly fixed, estimating this item as a percentage of sales is inappropriate. Instead, you must forecast a detailed schedule for all the items. Although the income statement shows only the total G&A expense, a footnote can refer the reader to the detailed schedule of G&A expenses.

The list of items in *Exhibit 3* is representative of what might be included. One item deserves special attention: officer's salaries. While entrepreneurs go into business to make lots of money, seeking one's fortune in a struggling new venture is foolish. Even if the entrepreneur is providing all the necessary start-up funds, the wisdom of taking a salary comparable to what might be expected in a more mature company is questionable, to say the least. Investors do not, however, expect the entrepreneur to live on a clerk's salary. Perhaps the best advice is to start off rather low and increase the salary as profits permit. McDonald assumed it would hire a second officer after the first year, so the total was the product of two, and later more, officers' salaries.

McDonald's other G&A expenses included such calculations as payroll taxes, predetermined items like rent and insurance, and items to be negotiated, such as lobbying in the state capital. Some items were mere guesses (nonsales travel and telephone), and some catchall attempts (start-up costs).

Selling expenses can be treated the same as G&A. A company needs to develop a detailed schedule (see *Exhibit 4* for an example) to include the items relevant to the business at hand. For McDonald Company, we included salaries for two salespeople for the first month, three for the second, and four for the fourth month on through the rest of the first year. Travel expenses for the salespersons were estimated to be equal to salaries after the first few months. Interest expense on the equipment loan for the McDonald Company was $2,333 for the first month and declined thereafter as principal was paid.

The only other forecast item on the income statement is taxes. At first, there are no taxes, but even with the tax-loss carryforward (forward for 15 years, back for 3), taxes have to be included for the second year. Include state income taxes, if any, and use the percentage to be applied to net profit before tax. Estimating state income taxes is quite simple; the complication comes in forecasting the accrued taxes for the balance sheet. Once the income forecast is complete, you can turn to the balance sheet.

COMPLETING THE BALANCE SHEET

Keep the balance sheet as simple as you did the income statement. The first item on the balance sheet—cash—is the balancing item and is thus not

EXHIBIT 4

Selling Expenses, Year 1, the McDonald Company, Most Likely Case

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JUL.
Advertising	$6,000	$6,000	$8,000	$4,000	$4,000	$4,000	$4,000
Travel	3,600	5,800	7,200	7,200	7,200	7,200	7,200
Salaries	3,600	5,800	7,800	7,800	7,800	7,800	7,800
Promo supplies	0	0	10,000	1,000	1,000	1,000	1,000
Commissions	0	0	0	0	0	0	0
Totals	$13,200	$17,600	$33,000	$20,000	$20,000	$20,000	$20,000

forecast separately. Instead, it results from the computation of the cash flow statement.

Accounts receivable may be forecast in two ways, each yielding different results. The more complicated way is to estimate what percentage of this month's sales the company will collect this month (for the McDonald Company, we assumed 5%), what percentage for the next month (we assumed 50%), and what percentage for the following two months (we assumed 30% and 15%). A separate schedule is necessary (for example, see *Exhibit 5*).

The standard way of forecasting accounts receivable is to use a turnover ratio (equal to monthly sales times 12 divided by the turnover figure—for example, 9). Because of the seasonality of sales, you would get dramatically different accounts receivable balances if you applied a constant turnover to each month.

In the first year for McDonald, the turnovers would have been those shown in *Exhibit 6*, Part A.

These turnovers make clear that the first procedure is advisable for monthly cash flow forecasting for a new venture, especially if sales are seasonal.

Inventory presents a more difficult problem than accounts receivable. Because of the pronounced seasonality in production and sales, using a constant turnover for cost of goods sold is not possible. For example, the inventory turnovers for the McDonald Company for the first year were as shown in *Exhibit 6*, Part B.

While the balance sheet shows inventory as one line, three types of inventory are actually on hand at any time: raw material, work in process, and finished goods. If you are using a cost accounting model, each month will produce these three totals. But because of the complexity of this model, you may wish to estimate (perhaps *guess* is the better term) what each of these inventory components will be, total them for each month, and use that number as the amount for inventory for the balance sheet. In the case of McDonald, we estimated unit production for the first year to be as shown in *Exhibit 7*.

By estimating the average cost of each finished unit, you can approximate the finished-goods component of inventory. With an eye to the production schedule, you can estimate how much raw material you will require. By spreading this raw material over the other months, you can get a crude estimate of the raw material component. You estimate work in process by examining the production schedule and assuming an average cost for the units, say, when they are half completed.

Totaling these admittedly crude estimates (as in *Exhibit 8*) reveals a surprisingly close approximation of the needed inventory level required.

Other assets, which for a new venture include principally prepaid expenses, should be itemized and priced on a separate schedule and the total shown on the balance sheet. Do not show these items as a turnover or a percentage of sales.

Plant, property, and equipment must also be individually budgeted and not shown as a percentage of sales. If the vendor of the equipment or a third party offers financing, show it in the liabilities section of the balance sheet.

For the McDonald Company, the accounts payable amount included all raw material purchases except for the initial one and assumed payment in the following month. These purchases further assumed, of course, that once under way the business could get credit. For other companies, accounts payable might include items in addition to raw material purchases. For the McDonald Company, we put those items in a separate account—accrued expenses (not shown on the sample cash flow statement). For the accounts payable forecast, we simply let the raw materials purchased lag one month.

Accrued expenses for the McDonald Company included prepaid, selling, and G&A expenses less insurance, depreciation, and bad debts. We assumed most of these expenses would be paid in the following month and let them lag one month for balance sheet purposes. Payroll taxes we assumed would be paid quarterly.

Accrued taxes are the result of applying the tax rules to the income statement item for taxes. Taxes are payable on the fifteenth day of the fourth, sixth,

EXHIBIT 5

Calculation of the McDonald Company's Monthly Accounts Receivable Balance, Year 1

	JAN.	FEB.	MAR.	APR.	MAY	JUNE
Beginning accounts receivable	$0	$0	$0	$0	$55,290	$192,060
Add sales (debits)[1]	0	0	0	58,200	174,600	174,600
Subtotal	0	0	0	58,200	229,890	366,660
Collections[2]						
Month's sales (5%)	0	0	0	2,910	8,730	8,730
1 month ago (50%)		0	0	0	29,100	87,300
2 months ago (30%)			0	0	0	17,460
3 months ago (15%)				0	0	0
Total collections	0	0	0	2,910	37,830	113,490
Ending accounts receivable	0	0	0	55,290	192,060	253,170
Change in accounts receivable	$0	$0	$0	$55,290	$136,770	$61,110

1. Assumes net of bad debts.
2. Representative collection figures assumed for years 4 and 5.

EXHIBIT 6

Turnover at the McDonald Company

A. TURNOVER OF ACCOUNTS RECEIVABLE

	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Turnover	39.1%	11.3%	8.5%	5.3%	1.7%	6.8%	12.6%	12.7%

B. TURNOVER OF INVENTORY

	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Turnover	3.6%	3.0%	3.7%	3.0%	0.1%	1.0%	1.6%	1.1%

ninth, and twelfth months, and estimates can be based on the prior year's taxes or the current year's earnings. (We used the prior year's for McDonald.)

How do you best handle the delicate problem of distinguishing between long-term debt and equity? My preference is to include in long-term debt only what I call "bring-along financing"—that is, financing that is offered almost as a matter of course on such purchases as equipment. (Real estate, too, might involve such financing, but buying land and buildings at the start of a new venture would be a strange use of precious funds. It's better to rent or lease until the business is well established.)

Structuring the debt/equity ratio of a new venture is quite acceptable if you are underwriting or syndicating the venture yourself. But if you have to go to one or two venture capital sources for the bulk of the financing, you will probably want to leave that decision to your outside investors. (I once lost the financing for a start-up venture when the institution took exception to my structuring the deal. It thought the debt/equity issue was its prerogative and rejected the deal rather than hassle over the matter.) Interest and principal payments will throw off the cash flow forecast, but you can correct this imbalance later.

In this model, the object is to forecast how much money will be needed to capitalize the venture. To avoid anticipating the decision of potential financiers, it's best not to consider how much of this to invest via debt instruments and how much by equity—common or preferred stock. When that decision is made and the capitalization known, the forecast can be revised to include this decision. An overdraft in the cash account can replace the required long-term debt and equity, at least initially.

AT LAST: THE CASH FLOW STATEMENT

Once you have completed the income statement and the balance sheet forecasts, you have the ingredients for the cash flow statement. Essentially a combination of the income statement and the balance sheet,

EXHIBIT 7

Calculation of Finished-Goods Inventory, the McDonald Company

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
Number of units manufactured	0	100	100	100	300	300	300	200	100	200	200	200
Cumulative units manufactured	0	100	200	300	600	900	1,200	1,400	1,500	1,700	1,900	2,100
Less cumulative units sold	0	0	0	100	400	700	1,000	1,200	1,250	1,350	1,500	1,700
Finished-goods inventory	0	100	200	200	200	200	200	200	250	350	400	400

EXHIBIT 8

Estimated End-of-Month Inventory versus Actual Inventory, the McDonald Company (in thousands of dollars, crudely estimated)

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
Raw material	$198	$100	$154	$150	$140	$132	$120	$110	$132	$120	$110	$330
Work in process	25	25	25	75	75	75	50	25	50	50	50	125
Finished goods	0	32	63	95	158	158	158	126	95	142	173	189
Estimated	$223	$157	$242	$320	$373	$365	$328	$261	$277	$312	$333	$644
Actual	$208	$219	$283	$378	$310	$375	$300	$248	$383	$370	$341	$652

it shows the changes that will occur in the cash balance.

Before considering the items on the cash flow statement, I must point out that for income statement items, the actual dollar amount is shown for the period in question. For example, if net sales for one month were $300,000, the amount would appear on the cash flow statement for that month. (See *Exhibit 9* for a sample cash flow statement.)

For balance sheet items, however, it is the period-to-period change that should be included in the cash flow statement, and whether the change is added or subtracted is indicated by the symbol +Δ or –Δ, which should be read "plus a positive change" or "minus a positive change." Of course, if the change is negative and the symbol is –Δ, then algebraically this would be minus a minus, so the amount should be added.

The cash flow statement has seven parts. The first three deal with the basic operations of the company. Part one, net operating cash inflow, includes sales from the income statement minus a positive change in accounts receivable.

Later, after the venture is reasonably well established, you may want to pledge receivables and/or inventory as collateral for a working capital loan from a bank. In that case, you would add, under –Δ accounts receivable or +Δ bank borrowing, the increase or decrease in the loan amount. Including this item in this section, even though it is a financial rather than an operating matter, prevents the net operating cash flow (NOCF) from being negative much of the time.

It is true that if you start out using a receivables-based credit line, you will need less venture capital to start the business. But this type of financing may make it impossible to obtain extra financing later because the company will have no collateral left to offer. It is best instead to leave receivables-based financing as a contingency financing source in case it's really needed.

Even worse would be factoring, which is the sale of the receivable. I first formed this opinion in the course of assisting with the start-up of an ophthalmic laboratory. The entrepreneur's lawyer did his best to convince us that we should sell the receivables to the company for which he was counsel. We resisted, and well we did, for when the venture got into trouble, it was able to use the receivables as another source of capital.

The second part of the cash flow statement, total operating cash outflows, includes cost of goods sold (excluding depreciation), G&A expenses, selling ex-

EXHIBIT 9
Sample Cash Flow Statement

CASH FLOW STATEMENT FOR THE PERIOD ________ TO ________

	Month			
Operating cash inflows				
+ Net sales	$	$	$	$
+ Other income				
−Δ Accounts receivable[1]				
1 Net operating cash inflows	$	$	$	$
Operating cash outflows				
+ Cost of goods sold less depreciation	$	$	$	$
+ General and administrative expenses				
+ Selling expenses				
+ Taxes				
−Δ Accrued taxes				
+Δ Inventory				
+Δ Prepaid expenses				
−Δ Accounts payable				
2 Total operating cash outflows	$	$	$	$
3 Net operating cash flow (item 1 less item 2)	$	$	$	$
Priority outflows				
+ Interest expenses	$	$	$	$
+ Current debt repayable				
+ Lease payments (not included above)				
4 Total priority outflows	$	$	$	$
Discretionary outflows				
+ Capital expenditures	$	$	$	$
+ Research and development expenses				
+ Preferred stock dividends				
+ Common stock dividends				
5 Total discretionary outflows	$	$	$	$
Financial flows				
+Δ Debt instruments (borrowings)	$	$	$	$
+Δ Stock securities (equity)				
+Δ Term loans				
6 Total financial flows	$	$	$	$
Net change in cash and marketable securities accounts				
+ Net operating cash flow (item 3)	$	$	$	$
− Priority outflows (item 4)				
− Discretionary outflows (item 5)				
+ Financial flows (item 6)				
7 Net change in cash and marketable securities	$	$	$	$
End-of-period cash balance	$	$	$	$

1. Δ = Period-to-period change in total dollar amount.

penses, and taxes from the income statement. Next comes minus a positive change in accrued taxes, plus a positive change in inventory and prepaid expenses, and −Δ accounts payable. Subtract this second item, total operating cash outflows, from the first, net operating cash inflows, and the result is net operating cash flow. NOCF pinpoints how much cash was generated from the basic operations of the company. This is cash with which to grow the company.

The first use of NOCF is to pay the priority outflows, which consist of interest expense and debt repayment. Here you would also include a large lease payment—say for the premises the company occupies—in lieu of a mortgage payment. (Small lease payments go under cost of goods sold, G&A expense, or selling expense.)

The next section, discretionary outflows, includes a ranking of four discretionary expenditures. For example, in certain businesses—toys, for example—advertising expenses might be as much as or more

EXHIBIT 10

Cash Flow Statement for the McDonald Company, Year 1; Jan.– Mar., Year 2

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.
Operating cash inflows															
+ Net sales	$0	$0	$0	$60,000	$180,000	$180,000	$180,000	$120,000	$30,000	$60,000	$90,000	$120,000	$180,000	$300,000	$420,000
– Change in accounts receivable	0	0	0	55,290	136,770	61,110	17,460	(55,290)	(109,125)	(20,370)	27,645	45,105	74,460	143,085	173,640
(1) Net operating cash inflows	0	0	0	4,710	43,230	118,890	162,540	175,290	139,125	80,370	62,355	74,895	105,540	156,915	246,360
Operating cash outflows															
+ COGS (less depreciation)	0	0	0	32,013	94,165	93,227	93,077	62,498	15,629	31,245	46,845	62,074	92,284	153,179	213,731
+ G & A expense (less depreciation)	27,640	18,860	24,560	15,760	18,760	18,760	19,180	17,380	14,680	15,580	16,480	17,380	29,610	32,010	34,410
+ Selling expenses	13,200	17600	33,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	41,000	43,400	45,800
+ Taxes	0	0	0	0	0	0	0	0	0	0	0	0	9,302	27,426	49,309
– Change in accrued taxes	0	0	0	0	0	0	0	0	0	0	0	0	9,302	27,426	49,309
+ Change in inventory	208,430	10,430	164,430	(5,723)	(67,875)	65,063	(74,717)	(52,068)	134,731	(12,885)	(28,485)	310,076	(50,134)	(111,029)	188,349
+ Change in prepaid expenses	2,200	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	2,750	(250)	(250)
– Change in accounts payable	43,040	(5,940)	173,000	(176,340)	660	129,480	(130,320)	1,380	129,240	(130,620)	1,380	327,040	(292,440)	1,960	349,280
(2) Net operating cash outflows	208,430	52,630	48,790	238,190	64,190	67,370	187,660	46,230	55,600	184,360	53,260	82,090	407,950	115,350	132,760
(3) Net operating cash flow	(208,430)	(52,630)	(48,790)	(233,480)	(20,960)	51,520	(25,120)	129,060	83,525	(103,990)	9,095	(7,195)	(302,410)	41,565	113,600
Priority outflows															
+ Interest expenses	2,333	2,286	2,237	2,187	2,137	2,086	2,034	1,981	1,928	1,873	1,818	1,761	1,704	1,645	1,586
+ Current debt repayable	2,870	2,917	2,966	3,015	3,066	3,117	3,169	3,222	3,275	3,330	3,385	3,442	3,499	3,557	3,617
(4) Total priority outflows	5,203	5,203	5,203	5,202	5,203	5,203	5,203	5,203	5,203	5,203	5,203	5,203	5,203	5,202	5,203

EXHIBIT 10

Cash Flow Statement for the McDonald Company, Year 1; Jan.– Mar., Year 2 (Continued)

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.
Discretionary outflows															
+ Capital expenditures	200,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(5) Total discretionary outflows	200,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Financial flows															
+ Debt instruments (borrowings)	140,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(6) Total financial flows	140,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net change in cash and marketable securities															
+ Net operating cash flow (item 3)	(208,430)	(52,630)	(48,790)	(233,480)	(20,960)	51,520	(25,120)	129,060	83,525	(103,990)	9,095	(7,195)	(302,410)	41,565	113,600
– Priority outflows (item 4)	5,203	5,203	5,203	5,202	5,203	5,203	5,203	5,203	5,203	5,203	5,203	5,203	5,203	5,202	5,203
– Discretionary outflows (item 5)	200,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+ Financial flows (item 6)	140,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(7) Net change in cash and marketable securities	($273,633)	($57,833)	($53,993)	($238,682)	($26,163)	$46,317	($30,323)	$123,857	$78,322	($109,193)	$3,892	($12,398)	($307,613)	$36,363	$108,397
Projected ending cash balance	($273,633)	($331,466)	($385,459)	($624,141)	($650,304)[1]	($603,987)	($634,310)	($510,453)	($432,131)	($541,324)	($537,432)	($549,830)	($857,443)	($821,080)	($712,683)

1. Maximum negative cash balance.

than R&D or capital expenditures in other businesses. Even the sequence can be different. Use whatever sequence fits your business.

If you plan to buy equipment and have the manufacturer or other third party finance a portion of the price, you would, looking at *Exhibit 9*, record the transaction as follows: show the total price of the equipment in the "start" column for capital expenditures, the amount of the note in the start column as a debt instrument in the financial flows section, and periodic payments in their respective time period columns as priority outflow—interest expense and debt repayment.

In the initial financial cash flow forecast for the new venture, I suggest that no entry be made in the financial flows section except the bring-along financing I referred to previously.

The punch line of the cash flow statement is part seven, net change in cash and marketable securities. This is defined as part three (NOCF) minus part four (total priority outflows) minus part five (total discretionary outflows) plus or minus part six (total financial flows). For convenience, the end-of-period cash balance (the same as the balance sheet amount) is shown at the very bottom of the cash flow statement.

Since cash is the balancing item in the financial forecast, part seven would normally be negative for at least the first few months. This information helps answer the question on every entrepreneur's mind.

HOW MUCH CASH IS NEEDED?

The cash flow projection gives a reasonable estimate of the amount of cash needed to start the venture.

If net change in cash is –$57,833 in a month (as it was in February of year 1 for the McDonald Company), the business would have zero dollars at the end of the month if it started that month with $57,833 in its cash (checking) account. Not all monthly changes are negative, but if we algebraically add these changes to net change in cash, a running cash balance emerges for the end of the month.

Exhibit 10 shows a portion of the most likely scenario for the first two years of the cash flow statement for the McDonald Company. This projected negative cash balance keeps increasing until it reaches a maximum decrease in January of year 2 of –$846,063. From this time on, the cumulative cash balance rises, becomes a positive balance briefly in December of year 2, and falls back to a negative number for several more months until June of year 3, when it becomes positive consistently. This means that the company needs $846,063 in its bank account at the start to finance the most likely scenario of the financial forecast.

But what if the company does not meet these forecasts exactly? Surely it won't!

The solution is to forecast two other scenarios—a most pessimistic and a most optimistic situation. These forecasts are not as much trouble as they may seem since a number of items are the same for all these scenarios.

While these forecasts are not shown here, we did them for the McDonald Company and noted the largest decrease in the cash balance for each scenario. For the most optimistic scenario, the maximum negative cash balance was $1,052,289 (occurring in April of year 2). For the most pessimistic scenario, the comparable number for the first two years was $859,756 (occurring in April of year 2). It's not really surprising that the most optimistic scenario required more cash than the most pessimistic, as generating more sales meant heightening working capital requirements, especially accounts receivable and inventory.

If you take the larger difference between the maximum negative cash balance for the most likely scenario and either the most optimistic or the most pessimistic situation, you get an estimate of our contingency factor. In this case, the most pessimistic is only $13,693 more than the most likely scenario number, but the difference for the most optimistic projection is $194,846.

Surely, if you listed the capital required as $846,063 plus a contingency reserve of $194,846, your figures would have specious accuracy, which would not speak well for the forecaster. So round off the numbers and state that the business needs capital of $850,000 plus a contingency amount of $200,000, or a total of $1,050,000.

What if the entrepreneurs perceive that their track record will not support a request for the amount needed to finance the venture? They can go back to the income statement and balance sheet and make adjustments that might save money. Perhaps scaling back the sales forecast even more than the most pessimistic estimate might help. A company could save on working capital or buy used machinery instead of new or could subcontract production until the business was healthy. Whatever the alternatives, you can use the same model.

Now a potential venture capitalist might examine these forecasts and say, "Fine, but you don't need all this money now, at the start. Let's put up some of the required capital, and when you need the rest, ask for it."

Such a directive can be the kiss of death for a new venture because when the entrepreneur calls for more money, the venture capitalist can well say, "Sorry, but my funds are tied up right now. You'll have to wait awhile." (This was the response the first start-up venture on which I worked got. As a result, I formed my first law of entrepreneurship: if you want to fly to financial paradise, have enough gas to make the trip, as there are no service stations along the way!)

If the business attempts to raise venture capital once it has started and before it gets to a positive cash flow position (ready for second-stage financing), all it will have to show is a trail of red ink on its financial statements. True, the new business does not need all the required cash on day 1, but the cash should be available when needed.

One way to ensure that funds will be available is to arrange with a bank for a letter of credit. Then, if the venture capital source is temporarily short of funds, the bank can advance the funds based on the venture capitalist's credit.

The process for determining the capital requirements for a new venture really is not mysterious, only a bit complicated. The key to this determination (and to financial forecasting in general) is the cash flow statement. A two-step financial forecast is advisable, one to summarize the data and two to support the data with details in footnotes and schedules.

The cash flow statement is at the heart of the answer to the question, How much cash is needed to finance the venture? The negative cash balance line on the most likely scenario provides an estimate of the required venture capital. You can calculate the contingency amount of venture capital by comparing the maximum decreases in cash balance for the other two scenarios.

Reference is made to "short-term borrowing" in the cash flow projections. GFI should identify the source of this borrowing in this section. Also, in the absence of any significant debt relationship, little provision has been made for future contingent or growth capital.

Finally, at no point does GFI state what the company's legal form is. We know, from the business plan's title, that it is a corporation, but not if it is an S corporation, or where it is incorporated.

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FINANCIAL PLAN

The purpose of the financial section of a business plan is to formulate a credible, comprehensive set of projections reflecting the company's anticipated financial performance. If these projections are carefully prepared and convincingly supported, they become one of the most critical yardsticks by which the business's attractiveness is measured.

While the rest of the business plan communicates a basic understanding of the nature of the enterprise, projected financial performance addresses itself most directly to the bottom-line interests and concerns of both the entrepreneur and the reviewer. It is here that the investor discovers what sort of return he or she should anticipate, and the lender learns about the borrower's capacity to service debt.

In the case of a new or infant enterprise, it is important to put the nature of the financial plan into proper perspective. In such a situation, there is no financial history on which one may base estimates. The obvious consequence is that projections will be clouded with uncertainty. However, while the financial section of such a business plan will explore a less-than-certain future, attention to detail can make this section far better than guesswork.

First, one can't overemphasize the importance of reliable data. The quality of research is directly reflected in the accuracy of projections. Further, the reviewer will likely do his or her own investigation and evaluation in order to assess the validity of these projections. The implication is that if the

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financial section deviates from appropriate guidelines, such as industry averages or ratios, there had better be a sound explanation of why that is so.

Second, because it is widely accepted that projected financial analysis will be to some extent uncertain, it is often advisable to calculate more than one financial scenario, even if all of these scenarios are not presented in the formal plan. As in the marketing plan, the financial plan might include several sets of projections—for example, one based on a conservative set of assumptions and another reflecting the business's full potential. Together these projections become a framework, or sensitivity analysis, allowing the reviewer a better understanding of the company's anticipated performance.

Third, it is important to review periodically, and, when appropriate, revise projections. A lender or investor may examine a business plan over many weeks or months. During this period, significant events might occur that have an impact on expected financial performance. For example, certain contracts may have been awarded that result in anticipation of greater sales volume. Or the price of raw materials might change, influencing expected gross profit. If a business plan is to be effective as a planning tool and as a document used to raise financing, its content must be current. This is especially true of financial projections.

Fourth, the financial plan must conform to the details presented in the remainder of the business plan. If the marketing section presents an elaborate and expensive advertising campaign, this should be reflected in the projected income statement. If a seasonal pattern has been indicated in a sales analysis, projected cash flow should incorporate the same pattern. A lack of consistency will indicate either carelessness or an incomplete understanding of the business.

In many respects, the financial plan is the least flexible part of a business plan in terms of format. While actual numbers will vary, each plan should contain similar statements—or schedules—and each statement should be presented in a conventional manner. There should be enough information in these statistics to let reviewers know that the entrepreneur understands not only his or her particular business, but how it relates to similar businesses.

Circumstances will dictate to some degree the detail of the financial statistics presented. Some companies keep records annually, and others quarterly, monthly, weekly, or even daily. But in general, the information that should be presented includes the following:

The set of assumptions on which projections are based should be clearly and concisely presented. Numbers without these assumptions will have little meaning. It is only after carefully considering such assumptions that the reviewer will be able to assess the validity of financial projections. Because the rest of the financial plan is an outgrowth of the assumptions, they are, in an important sense, the most integral part of this section.

Projected income statements, typically for five years and for at least three years, should be included. These statements most often reflect at least quarterly performance for the first two years, while years three through five are often quarterly or annual.

Projected cash flow statements for the first two years should be developed in as great a detail as possible. Quarterly or annual cash flows, corresponding to the period used for the income statements, are sufficient for years three through five.

A current balance sheet—for new companies, a balance sheet reflecting the financial position of the company at its inception—and projected year-end balance sheets, typically for five years and for at least three years, should be included.

Other financial projections might also be helpful. For example, a break-even analysis will demonstrate the level of sales required to break even at a given scale of operation. Additionally, financial summaries that reflect the contribution of specific products and services to overall company performance might be prepared.

In addition, it is appropriate to include historical financial performance for an existing business looking to expand or acquire another company. Depending on the business's age and nature, a reviewer will generally want three or more years of income statements and balance sheets. Also, depending on when the most recent fiscal year ended, the reviewer may require interim financial statements, perhaps as of the conclusion of the most recent quarter.

The financial plan, properly prepared, can be used to assess performance after the business actually starts. In some instances this plan may be the basis for a detailed operating budget. Here again, the purpose of a business plan goes beyond the review by interested, external parties. It actually becomes a guiding document, detailing how and when capital should be expended and listing objectives that must be achieved if the business is to be successful.

IX. FINANCIAL DATA

The following schedules, which have not been audited or reviewed by an independent CPA, provide detailed financial projections for years one through five of GFI's operation. These projections represent management's best estimates of future financial performance.

In summary, GFI expects to have a positive cash flow within the first quarter of year four and to be profitable throughout that year. By the end of year six, the company anticipates operating at a 50 percent gross profit margin; a 9.6 percent of sales after-tax profit with a return on equity of 48.9 percent.

Attached are the following schedules:

Notes and assumptions for financial projections
Projected statement of operations (income statements)

Summary of historical financial data
Current estimated balance sheet
Projected cash flow statements
Projected balance sheets
Estimates of selected financial ratios and statistics

NOTES AND ASSUMPTIONS FOR FINANCIAL PROJECTIONS

The importance of assumptions in relation to the overall financial section has already been emphasized. Without them, it is almost impossible for the reviewer to assess the projections competently. The guiding objectives in presenting assumptions is to be compelling yet concise.

The reviewer probably will not have the same degree of expertise as the preparer with regard to the proposed venture. As a result, numbers that intuitively make sense to the entrepreneur may still require explanation in the business plan. This literally may mean stating assumptions that relate line by line to the financial plan projections. Usually, however, this level of detail is unnecessary. Normally, stating certain key assumptions is sufficient to bring projections into proper focus.

The most important element in all of the projections, and the one that requires the greatest degree of support, is the anticipated sales volume. The credibility of this forecast is so important that an entire section in the marketing plan, rather than a single assumption, may be devoted to its support. As a consequence, the reviewer may well have received sufficient background regarding sales performance before he or she even turns to the financial plan. Still, it may be worthwhile to restate this support in summary form or add further insight. For the most part, the rest of the financial plan is an outgrowth of this critical element.

A second important assumption pertains to cost of goods sold and gross profit. This depends jointly on the cost of production or acquisition and pricing policy. Both the marketing section and operations section may shed light on this number. As a result, it is often sufficient to offer a simple explanation or percentage at this point in the plan.

Similarly, a complete set of assumptions should be developed for all of the projections contained in the financial plan. The entrepreneur must exercise careful judgment as to what degree of explanation is appropriate for each part of the financial plan. It is important to note that the nature of the business will dictate where such support is required.

For example, in an exotic, high technology business, the research and development budget may require careful explanation. In contrast, a more traditional company may not require any explanation of its modest research and development efforts.

In stating assumptions, it is useful to cite specific sources of information. As an illustration, a retail outlet might base sales and related inventory on an inventory turnover average provided by a specific trade association. Mention of the trade association helps legitimize the assumption. Depending on the complexity and extensiveness of assumptions, the entrepreneur should use discretion in deciding whether to combine all assumptions into a single statement, or provide a separate set of assumptions for each projection.

In making assumptions, one must bear in mind the inherent nature of projections. It is virtually impossible to eliminate all uncertainty. Rather, in the most brief and simple manner possible, the entrepreneur should try to elevate the confidence level of the reviewer regarding the company's ability to translate projections into operating reality.

Finally, it is important to note that entrepreneurs are often optimists. There is often too great a tendency on their part to assess a project's future in an overly positive light. For this reason, it has been suggested that several projections, based on different assumptions, be presented. In a similar vein, entrepreneurs should engage in "what if" analysis so that they fully understand the sensitivity of their business to certain critical factors.

For example, what happens to cash flow if, instead of extending 30 days' credit, a supplier will only ship raw materials C.O.D.? While all such scenarios need not be included in the business plan, this type of planning is invaluable in terms of allowing the entrepreneur a complete understanding of the financial nature of the business. In this age of personal computers and electronic spreadsheets, the generation of various financial scenarios is relatively easy.

NOTES AND ASSUMPTIONS FOR FINANCIAL PROJECTIONS

All financial statements have been projected on a quarterly basis and summarized annually.

Schedule 1: Projected Annual Income

Net Sales

For planning purposes, GFI has divided the national market into 15 equivalent regional markets. Rather than seek the outside investment necessary to mount a national campaign, the company plans to focus initially on two key markets, the Northeast and California. Equity investment, cash flows from these markets, and debt secured by inventory and accounts receivable will provide the funds necessary for further expansion.

The company expects to be operating in five of the 15 U.S. markets within five years, and sales projections assume entry into these markets in the following years.

Year	Number of markets
1	2
2	2
3	3
4	4
5	5

Sales for each market were projected using assumptions on the number of stores, the number of orders annually, and the average order size. Average order size and the average number of orders in the industry and target markets are provided by *Vick Products Sales Research Corporation.* Health-food-industry experts have advised the company that it can conservatively expect to gain a 75 percent distribution in the retail outlets of a given market area.

For each quarter and for each market the following formula was used:

Age Group	Average Order Size in $	Average Number of Orders	Average Number of Retail Outlets	Distribution	Total Sales Per Market
6-12 months	x	x	x	0.75	=
1-3 years	x	x	x	0.75	=

Total Sales per Market

A 50-percent distribution was assumed during the months immediately following entry into a new market. By the end of year one, 75-percent distribution is expected. Each market was expected to grow by 25 percent annually.

Based on information provided to GFI by *Vick Product Sales Research Corporation* and numerous industry experts, the company projects the following sales revenues and cost-of-sales percentages (see Attachments 14–3 and 14–4).

SALES REVENUES
($ thousands)

Year	Age 6–12 months	Age 1-3 years	Total Sales
1	$ 511	$ 705	$1,216
2	639	881	1,520
3	1,103	1,550	2,653
4	1,661	2,361	4,022
5	2,305	3,356	5,661

COST OF SALES (%)

Year	Age 6-12 months	Age 1-3 years
1	51	49
2	51	49
3	50	50
4	50	50
5	50	50

First-year estimates are based on firm manufacturing price quotes that GFI has obtained verbally. The salaries of the premix operations staff have been included in cost of sales. The terms of all sales are assumed to be 45 days.

Payments to the manufacturer that will produce GFI products on a subcontractor basis comprise 85 percent of cost of sales. The remaining 15 percent represents raw material costs and direct labor for the purchase and preparation of premix that GFI will supply to the subcontractor (as mentioned in the section on manufacturing and operations). This group will also be responsible for quality control. The subcontractor will pay all other raw material costs and labor.

Operating Expenses

Research and development expenses include the salary of George Knapp—$60,000 annually—and, beginning in year three, an assistant at $25,000 annually.

Benefits for all GFI employees are estimated at 20 percent of their annual salaries. All salaries are assumed to increase at 10 percent per year.

Expenses of $125,000 related to the further testing of new products will be incurred and expensed in year one. These expenses for development and testing of new products are expected to increase at 10 percent per year.

Sales and marketing expenses based on the market plan outlined in the marketing section are:

Year One

Initial Marketing Campaign	
Promotional products	$ 90,000
Test-market maintenance	18,000
Packaging design	55,000
Market planning	75,000
Market research, advertising and other promotional expenses	125,000
National sales manager (beginning second quarter year 1)	40,500
Miscellaneous	11,000
	$414,500

Year Two

Sales and marketing expenses are projected at 15 percent of sales. In the fourth quarter an additional $25,000 in promotional material and expenses and $18,000 in salary and benefits for the marketing director is included in preparation for entry into the third market.

Years Three through Five

Sales and marketing expenses are projected at 15 percent of sales plus $25,000 for promotional materials and expenses in the fourth quarter of each year in preparation for entry into additional market regions. Also, in the fourth quarter, an additional $7,500 in salary and benefits is included for the new sales assistants hired in the fourth quarter of years two and three.

General and administrative expenses are detailed in the following list. Administrative salaries include all employees not in the research, marketing, or premix production divisions.

Rent expense in years one and two is based on 3,500 square feet at $30 per square foot, with a 5-percent increase in the second year. In years three through five, rent expense is based on 5,000 square feet at $33 per square foot, with a 5-percent increase per year.

These rental costs include space that will be allocated to research, marketing, and sales activities. However, rental costs associated with premix preparation and quality testing have been treated as direct costs and included in the cost of sales estimates. The initial premix facility will be approximately 4,200 square feet (see facilities and properties).

GENERAL AND ADMINISTRATIVE EXPENSES
($ in thousands)

	Year 1	Year 2	Year 3	Year 4	Year 5
Salaries	$105	$181	$229	$256	$281
Benefits	21	36	46	51	56
Travel	21	28	35	43	54
Telephone	7	9	11	13	17
Utilities	5	10	10	13	15
Accounting and legal	40	40	50	55	60
Rent	105	110	132	139	146
Other	44	50	53	56	61
Total	$340	$464	$566	$626	$634

Amortization

Amortization to expense $163,000 in deferred start-up cost is projected on a straight-line basis over 10 years.

Interest Income

Cash balances at the beginning of the period are invested for that period at an average rate of 5 percent.

Interest Expense

Interest expense on short-term debt is charged at an 11.5-percent annual rate. Interest in year two is based on the $17,000 of short-term debt outstanding prior to equity financing that is repaid in the first quarter of the year.

A $50,000 loan was received before year one in the form of a one year note from a group of associates of the Drs. Knapp. An annual interest rate of 14 percent is carried on this loan.

Income Tax Expense

Income taxes are calculated at 50 percent of net income before taxes, less any tax-loss carryforwards, and are assumed to be paid in the quarter in which they are incurred. Tax-loss carryforwards are estimated on a quarterly basis by adding retained earnings last quarter, if negative, to the current quarter's net income.

Schedule 4: Projected Annual Cash Flow

A minimum cash balance of $15,000 per year is assumed for the purposes of these projections.

Cash Receipts

Collections are assumed to be made in 45 days, based on discussions with health food distributors. To simplify the projections, interest is assumed to be received in the quarter in which it is earned. Equity financing of $700,000 is assumed to be raised by issuance of additional shares of common stock.

Cash Disbursements

Projected direct labor relates entirely to production of the premix and product quality testing, since production is carried out by a subcontractor. Raw material and manufacturing overhead include costs for premix and payments to the subcontractor. Direct labor costs are assumed to be paid as incurred; all other expenses are assumed paid within 30 days.

Capital expenditures in year one include $6,000 for office equipment and $8,000 for a microcomputer and appropriate business software. No other capital expenditures are anticipated in year one.

In the following years office equipment and other fixed asset additions are projected at 1 percent of sales. These items are included as fixed assets on the balance sheet.

Long-term debt in this projection does not include repayment or additional borrowing. Long-term debt consists of a 10-year note with an annual interest rate of 14 percent.

Interest expense is also assumed to be paid during the quarter in which it is incurred.

Income tax expense is paid the quarter after it is incurred.

Short-Term Borrowing and Repayment

Short-term financing is assumed to be based on a revolving credit line with a maximum limit of 50 percent of the total accounts receivable and inventory balances in any quarter. Seventeen thousand dollars in short-term debt was borrowed to finance start-up activities. Repayment of this debt is included in the first quarter of year one. Additional funds are borrowed quarterly to cover cash shortfalls and maintain a minimum cash balance of $15,000. Short-term debt is repaid as funds become available.

Schedule 5: Projected Balance Sheet

Assets

Cash includes short-term investments. A minimum cash balance is assumed to be maintained through borrowing of short-term funds as necessary.

Accounts receivable are projected assuming a 45-day receivable period.

Inventory is projected based on an analysis of inventory turns in the health food industry and projected market expansion.

Fixed assets include the capital expenditures discussed previously. They are depreciated on a straight-line basis over five years.

Liabilities

Accounts payable include all trade payables and nonincometax accrued expenses. On average these expenses are paid in 30 days.

Short-term debt is projected to finance cash shortfalls in any quarter and to maintain a $15,000 minimum cash balance. Projected short-term debt is based on a revolving credit line that is repaid as funds become available. Interest on those funds is charged quarterly at an annual rate of 11.5 percent.

Taxes payable represents income tax expense for the fourth quarter in each year since income taxes are paid the quarter after they are incurred.

Long-term debt is entirely comprised of a $50,000 loan received prior to this proposed financing from a group of associates of the

Drs. Knapp. An annual interest rate of 14 percent is carried on this debt.

Owners Equity

Projected equity is comprised of initial equity of investment by the principals of $111,000 and $700,000 in additional equity financing projected in years one and two.

Retained earnings includes income and losses beginning in year one. All prior costs are included in deferred start-up costs and amortized over 10 years.

INCOME STATEMENTS

The purpose of an income statement is to capture in summary form the profit performance of a prospective venture. This projection is generally divided into revenues, cost of goods or services, expenses, and resulting pretax profit or loss. In many instances, it is appropriate to also show after-tax performance, since the tax effect of the venture is salient. The income statement is the most common—although not the most critical—indicator of financial performance for both start-up and existing ventures.

It is helpful to bear in mind the reviewer's objectives. A lender will be concerned primarily with a venture's viability. In most instances, at least interest, and often both interest and principal, are payable in the first month after a loan is made. Thus the capability to service debt usually must be demonstrated immediately. Profit potential is obviously attractive to a lender; however, because return is limited to a stated rate of interest, such potential is secondary to the ability to repay the loan.

In contrast, venture capitalists liberally share in a company's earnings, and thus have a primary interest in the company's growth potential. It is doubtful whether a venture capitalist would invest in a business simply because of the likelihood of viability.

The desires of a reviewer should influence the presentation of an income statement in terms of what elements are highlighted and the manner in which judgment is exercised in projecting returns.

1. Critical elements in the income statement should be scrutinized as they relate to sales volume, that is, as a percentage of sales. It is not at all unusual to present these percentages as a part of an income statement. They are often compared to industry benchmarks as a means of evaluating projected performance as well as credibility of the projection. Except in industries where such data are unavailable, such as new or quickly changing industries, the income statement should either be roughly consistent with industry averages or explanation should be offered where departures from these averages exist.

2. The numbers alone will mean little to the reviewer. An income statement can be prepared to show an enormous profit; yet, if such a profit is not a natural outgrowth of the rest of the business plan, it will mean little. The income statement, and in particular profit, should be consistent with the potential and limitations discussed in other sections. Inflated projections will detract from the plan's credibility.

3. This should reflect the business' tax status. A partnership or S corporation should include distributions to partners or stockholders once the business is operating profitably. Taxes should be estimated using an effective tax rate unless the business projects significant variations between income for accounting purposes and for tax purposes.

The following is the way GFI presented its income statement projections:

FIGURE 13–1. Schedule 1: Good Foods, Incorporated Financial Projections (In thousands)[a]

	Projected Annual Income ($ and % of Sales)									
	Year 1		Year 2		Year 3		Year 4		Year 5	
	Dollars	%	Dollars	%	Dollars	%	Dollars	%	Dollars	%
Net sales:										
Ages 6–12 months	511	42	639	42	1103	42	1661	41	2305	41
Ages 1–3 years	705	58	881	58	1550	58	2361	59	3356	59
Total sales	1216	100	1520	100	2653	100	4021	100	5661	100
Cost of sales:										
Ages 6–12 months	250	21	313	21	551	21	830	21	1152	20
Ages 1–3 years	360	30	441	29	775	29	1180	29	1678	30
Total cost of sales	610	50	754	50	1326	50	2011	50	2830	50
Gross margin	606	50	766	50	1327	50	2010	50	2831	50
Operating expenses:										
Research, dev., & eng.	197	16	217	14	268	10	295	7	325	6
Sales & marketing	415	34	366	24	430	16	636	16	849	15
Gen. & admin.	350	29	469	31	575	22	641	16	659	12
Total operating	962	79	1052	69	1274	48	1572	39	1833	32
Interest income	2	0	5	0	0	0	1	0	27	0
Interest expense	10	1	7	0	22	1	19	0	7	0
Net income (loss) before tax	(−364)	(−30)	(−288)	(−19)	31	1	420	10	1018	18
Tax expense	0	0	0	0	0	0	0	0	369	7
Net income after tax	−364	−30	−288	−19	31	1	420	10	649	11

[a]Note all figures have been rounded to nearest $1,000 or whole percentage.

SUMMARY OF HISTORICAL FINANCIAL DATA AND ESTIMATED BALANCE SHEET

Often, reviewers find it helpful to understand the history of the company in a financial format. The business plan can present a brief "history" of the sources and application of funds to show all receipts and expenditures from inception to date. This enables the reviewer to understand the financial history very quickly.

Similarly, the estimated balance sheet enables the reviewer to see the assets, liabilities and owners' equity at the time the plan was prepared. Other schedules or illustrations may give more detail later. However, these summaries enable the reviewer to have a quick reference point without detailed review of the financial projections.

FIGURE 13–2. Schedule 2: Good Foods, Incorporated Summary of Historical Financial Data

Sources of Funds:	
Equity Investments:	
Drs. George and Samuel Knapp	**$ 58,500**
Other investors	**52,500**
	$111,000
Loans:	
Loan proceeds	**$ 67,000**
Total sources	**$178,000**
Application of Funds:	
Deferred Start-Up Costs	
Research and development	**$ 21,000**
Marketing and promotion	**1,900**
Travel related to market research and product development	**58,100**
Legal and accounting	**6,500**
Office costs	**22,400**
Other operating costs	**53,100**
Total applications	**$163,000**
Net cash flow	**$ 15,000**

FIGURE 13–3. **Schedule 3: Good Foods, Incorporated Estimated Balance Sheet**

Assets:	
Cash	**$ 15,000**
Deferred start-up costs	**163,000**
	$178,000
Liabilities and Owner's Equity	
Liabilities	
Short-term debt	**$ 17,000**
Long-term debt	**50,000**
	$ 67,000
Owners' Equity	
Equity	**$111,000**
	$178,000

GFI presented its Historical Financial Data and Estimated Balance Sheet as shown in Figures 13–2 and 13–3.

CASH FLOW STATEMENT

The most critical of all financial forecasts in a business plan is the cash flow projection. In many ways it is analogous to the income statement.

There are, however, some important distinctions. Instead of revenues and expenses, a cash flow statement reflects cash actually flowing into and out of the business. As a consequence, the bottom line of a cash flow statement reflects a company's net cash position, rather than its profit. A few adjustments can transform an income statement into a cash flow statement:

With respect to sales, an income statement reflects the earning of revenue. A cash flow reflects the actual receipt of cash from sales. In order to make this adjustment, one must be sensitive to anticipated payment terms for sales.

A cash flow statement reflects the receipt of all cash from all sources, including sales, the infusion of debt or equity proceeds, and the sale of or the liquidation of an asset. An income statement may not include all of these.

With respect to expenses, an income statement reflects expenses incurred, while a cash flow statement reflects the actual payment of these expenses. Some expenses may be paid immediately while others may be paid over a period of time. In order to make this adjustment, one must understand the nature of credit policies as they relate to a particular business.

An income statement reflects depreciation, because depreciation is an expense. However, since depreciation does not represent a cash obligation, it is not included in the cash flow statement. Conversely, repayment of loan principal is not considered an expense and therefore is not included in an income statement. It is, however, a cash obligation and is included in a cash flow statement.

Other cash requirements, such as acquisition of equipment or payment of dividends are not considered expenses. Therefore, they have an impact on cash flow, but not income.

It is important to understand that early in the company's lifetime, cash position will be more critical than profitability, because it more directly reflects the company's viability.

For example, a facility that provides medical care has an operating plan that anticipates significant profits in the first year of operation. However, assume that most bills are paid by third parties—insurance companies, Medicare, and Medicaid—and payment typically takes 90 to 120 days. While the facility might appear healthy on an annual profit and loss basis, there may be a critical cash bind in the initial months, when there are many cash obligations yet no cash inflow.

This start-up business will have plenty of "sales" volume, but no cash receipts. If such a facility did not begin with an adequate amount of working capital, it may be unable to meet its obligations, despite its profits. As a result, its survival might literally be threatened.

Other important points should be kept in mind when preparing a projected monthly cash flow:

1. The nature of most projections, financial and otherwise, is that they become more uncertain as one looks further into the future. Thus, while a quarterly or monthly cash flow is appropriate and even mandatory for the first 12 to 24 months, it is advisable to prepare quarterly cash flows in the mid-term and annual cash flows in the long term. These latter time intervals should correspond to the time intervals employed in the preparation of income statement projections.

2. A useful way to evaluate cash position at the end of a period is to translate the figure into periods of operating cash coverage. For example, if the ending cash position hovers at $50,000 and the monthly operating budget is $25,000, the company has 60 days' operating capital on hand. The appropriate level of operating capital will depend on a number of factors, including the speed with which receivables are collected, the consistency of cash flow, and the probability of critical problems and opportunities arising. In any event, the relationship between a desirable working capital level and the operating budget is important.

3. In formulating the capital requirement necessary to launch one's venture, it is almost impossible to determine the level of working capital needed without projecting monthly cash flow. This is the only method by which one may predict when cash shortfalls will occur, and the extent of these shortfalls.

4. As is the case with an income statement, a monthly cash flow, if prepared carefully, can represent the basis for an operating budget and a set of objectives against which one can manage and evaluate actual performance.

BALANCE SHEET AND FINANCIAL RATIOS AND STATISTICS

Rather than reflecting performance over a period of time, a balance sheet allows a "snapshot" of a company's financial strengths and weaknesses at a particular point in time. A balance sheet summarizes the company's assets (what it owns), liabilities (what it owes), and net worth (the difference between assets and liabilities). Assets are typically classified as

FIGURE 13–4. Schedule 4: Good Foods, Incorporated Projected Annual Cash Flow[a]

	Year 1	Year 2	Year 3	Year 4	Year 5
Beginning cash balance	15	15	15	15	99
Cash receipts:					
Collections	1022	1524	2497	3840	5458
Interest	2	5	1	1	27
Long-term debt	0	0	0	0	0
Equity financing	450	250	0	0	0
Total receipts	1474	1779	2498	3842	5486
Disbursements:					
Operating expenses	879	1025	1252	1531	1795
Dir. labor costs	31	39	68	103	142
Raw materials	474	660	1112	1693	2358
Mfg. overhead less dep.	56	78	131	199	277
Capital expenditures	21	15	27	40	57
Long-term debt	0	0	0	0	0
Interest expense	10	7	22	19	7
Income tax expense	0	0	0	0	234
Total disbursements	1471	1825	2612	3585	4869
Net cash flow	3	−45	−114	257	616
Cash before loans	18	−30	−99	272	715
Short-term borrowing	64	59	114	0	0
Short-term repayments	67	14	0	173	0
Ending cash balance	15	15	15	99	715

[a] Note all figures have been rounded to nearest $1,000 or whole percentage.

"current," such as cash, inventory, and accounts receivable; "fixed," such as plant and equipment; and "intangible," such as good will and licenses. Liabilities are normally categorized as being "current" (due within one year) or "long-term" (due after one year).

When reviewed alone, any single element on a balance sheet will have little meaning. However, when all elements are examined relative to one another, a great deal can be inferred about the company's financial health. Even more can be learned when one views the balance sheet in conjunction with the company's income statement.

Some of the measures typically calculated in order to assess projected or historical performance are:

Liquidity Ratios. These ratios, such as the current and quick ratios, typically compare all or some of the company's current assets to its current liabilities. They suggest how capable the company is to meet its debt obligations in the near term.

Asset Management Ratios. These ratios, such as inventory turnover and accounts receivable turnover, give one a sense of how efficiently and effectively a company is employing the assets at its disposal.

Debt Ratios. These ratios, such as debt-to-equity, help place in perspective how the company is capitalized and, more precisely, how highly the company is leveraged. These ratios can help one understand the company's stability and its capacity to raise further capital.

As in the case of income statements, industries are often marked by certain financial characteristics. Companies in one industry may be highly leveraged. Those in another might enjoy a rapid turnover of inventory. Since the reviewer will rely on such benchmarks to evaluate the start-up, deviations from industry averages should be explained.

The company's opening balance sheet—the balance sheet that is anticipated at the start of the business—is relatively simple to prepare in that it reflects the amount of capital to be raised for the start-up. Specifically, it presents how the capital is to be spent (the assets that will be acquired) and how this capital will be raised (sources of debt and equity).

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Balance sheets should also be projected for the end of the company's first three to five years. These balance sheets will be a direct outgrowth of the opening balance sheet and intervening events such as the company's financial performance, changes in operating characteristics such as faster collection of accounts receivable, and subsequent infusions of equity and debt capital.

The following points are worth considering when preparing projected balance sheets:

1. First-time entrepreneurs sometimes mistakenly believe that it is possible to fund a company's start-up entirely through debt. This is analogous to attempting to buy a house with no down payment. In almost all instances, lenders require that some portion of the capitalization be provided through equity.

2. Most sophisticated lenders and investors want to see that a significant financial commitment has been made by the entrepreneur. Usually this means a commitment that is significant in light of the entrepreneur's personal financial resources. The rationale behind this is that after such a commitment has been made, the entrepreneur is locked into the venture. Should the venture encounter rocky times, the entrepreneur will not be able to walk away without incurring personal financial loss and will therefore devote full and best efforts to the success of the enterprise.

3. Liquidity is critical in the case of a young or infant company whose future is uncertain. Adequate liquidity will permit the company to weather unexpected difficulties and exploit unanticipated opportunities.

4. It is not unusual for a start-up operation to experience losses in its initial stages. Thus funding needed subsequent to the start-up often cannot be generated internally. Rather, later

rounds of financing which are sometimes critical for growth frequently must be sought from external sources—either lenders or investors.

The entrepreneur should recognize this, attempt to anticipate subsequent capital requirements accurately, and plan for these infusions in advance. Perhaps the worst time to seek capital is when the company desperately requires it.

A situation viewed as a crisis by the entrepreneur will probably not be pressing to the investor or lender unless he or she already has funds at risk in the venture. The funding source will desire adequate time to review the request. If pressured, the response will probably be negative. Even if the response is positive, a frantic request clearly weakens the entrepreneur's bargaining position and likely will result in the capital infusion being more costly.

In addition, some business plans include certain statistics and financial ratios they believe might be important to the reviewer. These ratios and statistics should include a method of calculation and some discussion of why they are meaningful to the company.

GFI presented its balance sheet projections as financial ratios as follows:

FIGURE 13–5. Schedule 5: Good Foods, Incorporated Projected Annual Balance Sheets[a]

	Opening Balance	Year 1	Year 2	Year 3	Year 4	Year 5
Assets:						
Cash	15	15	15	15	99	715
Accounts receivable	0	194	190	346	527	730
Inventory	0	12	37	72	113	118
Fixed assets	0	21	36	63	103	160
Accum. depreciation	0	−2	−7	−16	−32	−57
Deferred start-up costs	163	147	130	114	98	82
Total assets	178	387	402	593	908	1747

FIGURE 13–5. *(Continued)*

Liabilities:						
Accounts payable	0	141	166	228	311	382
Short-term debt	17	14	59	173	0	0
Taxes payable	0	0	0	0	0	135
Long-term debt	50	50	50	50	50	50
Total liabilities	67	205	274	451	361	567
Owners equity:						
Capital stock	111	561	811	811	811	811
Retained earnings	0	−380	−684	−668	−264	369
Total equity	111	181	127	143	547	1180
Total liabilities & equity	178	387	402	593	908	1747

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[a] Note all figures have been rounded to nearest $1,000 or whole percentage.

Good Foods, Incorporated
Projected Annual Financial Ratios

	Year 1	Year 2	Year 3	Year 4	Year 5
Inventory turns	68	36	25	22	24
Days receivables	46	46	46	46	46
Days payables	30	30	30	30	30
Gross profit/sales	49.8%	50.4%	50.0%	50.0%	50.0%
Net income/sales	0.0%	0.0%	0.6%	10.1%	11.2%
Debt/equity	35.1%	85.4%	156.1%	9.1%	4.2%
Return on equity	0.0%	0.0%	10.8%	73.9%	53.6%
Return on assets	0.0%	0.0%	2.6%	44.5%	36.2%
Return on investment	0.0%	0.0%	1.9%	49.8%	78.0%
Current ratio	1.42	1.08	1.08	2.38	3.02

BREAK-EVEN ANALYSIS

Although GFI did not, it is sometimes helpful to include in the financial section a break-even analysis, which demonstrates that level of sales that must be attained in order for a company to meet cash obligations, such as operating expenses and debt repayment, internally. Such analysis is mechanical and the necessary assumptions sometimes reduce its precision.

Regardless, it does afford a rough estimate of the volume that must be generated for the company to break even. This type of analysis is usually more meaningful to a lender than an investor, since lenders are primarily concerned with viability and capacity to service debt while an investor typically seeks a significant rate of return. In either case, a break-even analysis does help to define a major milestone in the company's life, the point at which cash generated from sales is sufficient to address all cash obligations.

The step-by-step procedure for calculating break-even is:

1. Segregate all cash obligations into fixed or variable obligations. A fixed obligation is one that does not vary with the level of sales, such as debt repayment. A variable obligation is one that does vary as a function of sales, such as cost of goods sold.

   It should be noted that many obligations will not be purely fixed or variable. For instance, total payroll might include office payroll, which is fixed, and production payroll, which is variable. In such an instance, one should do one's best to separate such an obligation into fixed and variable components.
2. A total fixed and a total variable cost figure should be calculated. Total fixed obligations will be stated as an absolute number, such as $100,000. Total variable cost will be stated as a percentage of sales, such as 60 percent.
3. These figures should then be inserted into the following formula.

$$\text{Break-even Sales} = \frac{\text{Fixed costs}}{\text{Contribution margin}}$$

Where Contribution Margin = 1 − variable costs as a percentage of sales

Therefore:

$$\text{Break-even Sales} = \frac{\$100{,}000}{1 - .60}$$

$$\text{Break-even Sales} = \$250{,}000$$

These calculations suffer from a number of limitations. Perhaps most importantly, there are typically different break-even levels of sales depending on the size of operation. Viewed in the proper light, however, this calculation will afford the reviewer a general idea as to what volume is required in order for a company to become self-supporting. This analysis is particularly enlightening when viewed in comparison to a projected income statement.

PRODUCT AND SERVICE SPECIFIC FINANCIAL SUMMARIES

It is often worthwhile to explain the importance of each product or service relative to the company's total scope of activity. Typically, this involves identifying the contribution margin of a specific product or service, or some group of products and services.

Mechanically, this can be accomplished by segregating sales figures and then, where possible, assigning expenses associated with each sales-generating activity. There will be some expenses that cannot readily be allocated in this manner. Some examples of this might include administrative payroll or interest expense. There is no reason or rationale for allocating such overhead to a specific product or activity. Rather, the difference between sales and associated expenses represents the contribution to overhead and profit for that product or activity. This in itself is meaningful in assessing the relative importance of each of the business's products or services.

Alternatively, it may be sufficient to communicate such information visually, using charts reflecting gross sales, gross profit, and operating profit. The mode of representation or whether to present such data is up to the entrepreneur. To decide, one must ask whether such information facilitates a significantly better understanding of the business.

COMMENT: FINANCIAL PLAN

GFI is both detailed and professional in its presentation of anticipated financial performance. Most important, the plan offers a comprehensive set of assumptions. Without these, evaluating performance would be a far more difficult task.

Performance is presented five years into the future on an annual basis. While this is fine for a "first cut" presentation in a business plan, one would hope GFI has projected performance on a quarterly or even monthly basis as well, at least for the first two years.

For both planning and reviewing purposes, the greater detail is meaningful, particularly in the early years before positive cash flow has been established.

The company shows us only one set of projections, which we can assume is a "most likely," scenario. With the aid of electronic spreadsheets, it would not be difficult for GFI to play some "what if" games and prepare both optimistic and pessimistic scenarios.

It should be noted that GFI saves some product-line profitability statements and sales analysis for the appendix. This is fine, so long as they are clearly presented and easily found.

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ATTACHMENTS TO THE BUSINESS PLAN

What to include as attachments to a business plan is highly dependent on the type of business, the kinds of products or services it will offer, and the complexity of the plan itself.

Attachments should not be used just to "wow" a reviewer, but should add to the reviewer's understanding should he or she desire to know more than what is presented in the body of the plan, and to add credibility to statements made in the plan, especially if they are complex and time-consuming to explain.

Some plans arrive at reviewers' offices with no supporting documentation, others with boxes of such attachments. In most cases, it is best not to burden the reviewer, and if you have a number of support documents, you may want to create an index and one-page summaries of each, letting the reviewer know that the full document will be sent on request.

The attachments that follow, from the GFI plan, are illustrative of some of the more common attachments sent with business plans.

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WHARTON REPROGRAPHICS

FAX INTERNATIONAL, INC. BUSINESS PLAN

EXECUTIVE SUMMARY

FAX International, Inc., was founded in June 1990 by Mr. Douglas J. Ranalli and Dr. Thomas P. Sosnowski, PhD. The goal of the company is to build an international communications network that will be seven times more efficient at transmitting fax documents than the switched voice networks of AT&T, MCI, and Sprint. The company's year-long design and development effort has been extremely successful. As a result the network will be ready for demonstration by the end of July 1991, and ready for full-scale implementation during October 1991. The opportunity now exists to offer business customers a vastly superior facsimile transmission service between the United States and major international city centers like Tokyo, London, Paris, and so on. Service is superior because it is both easier to use than direct-dial service from AT&T and 50 percent less expensive. For example, customers currently paying an average of $1.40/minute for service to Tokyo will pay only $.69 with FAX International, Inc. The FAX International network is so efficient that it will provide business customers 50 percent savings over current rates while earning 50 percent gross margins on the service once a minimum efficient volume level has been achieved.

The international telecommunications market has historically been closed to competition due to the presence of monopoly carriers in almost every country. The regulatory situation, however, is changing rapidly as countries all over the world look for ways to make their telecommunications industries more competitive. In June 1990, the European Commission directed members of the European Economic Community to begin deregulating all enhanced telecommunications services. Similarly, the United States and Japan negotiated the International Value Added Network Services (IVANS) agreement, which guarantees US value-added network service providers like FAX International fair and equal access to the Japanese market. The actions of the European Commission and the signing of the IVANS agreement between the United States and Japan have created an opportunity for a variety of international enhanced-communications services between the United States, Europe, and Japan. The opportunities have yet to be exploited due to the time required for companies to understand the recent regulatory changes and to develop appropriate technologies. An

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*Reprinted with the permission of Douglas J Ranalli, Founder and President of FAX International.

article in the June 15 issue of *EMMS* (Electronic Mail and Micro Systems) summed up the opportunity as follows:

> What is the magic formula for success in enhanced fax service? Whoever figures it out may turn out to be the William McGowan (MCI) success story of the 1990s. . . . Conceivably, a fax from [the United States] could travel via private lines to Tokyo, or London and be delivered with a local call – completely eliminating the need for the international switched network. The economic incentive is so strong that over the next two to three years, hundreds of millions of dollars/year of international facsimile traffic are likely to migrate from the switched voice networks of AT&T, MCI, and Sprint to dedicated facsimile networks.

FAX International, Inc., is prepared with the technology, the management team, and the regulatory approvals necessary to capitalize on this exciting international opportunity.

FAX International's initial objective is to establish a leadership position in the United States-to-Tokyo market during the first 12 months of operation. Expansion into two more markets, London to the United States and Paris to the United States, will follow soon afterwards. The United States–Tokyo market has been targeted first for three reasons:

1. It is the highest-volume international facsimile route in the world (390 million fax minutes/year in both directions between the United States and Japan in 1990; 175 million fax minutes/year in one direction from just the United States to Tokyo). See "Market Size."
2. It is the fastest growing route (growth rate projected at over 30 percent/year).
3. Potential customers are highly concentrated in a few major US city centers and are easy to identify. Of the 9,000 Japanese affiliated firms operating in the United States, over 50 percent are located in Los Angeles, San Francisco, and New York.

FAX International has succeeded in assembling the technology, the business support systems, and the management team necessary to provide a full scale service between the United States, Tokyo, and other major international city centers. The next step is to complete a second round of financing which will be used to install the network and bring the company to a cash-positive position within the first 12 months of operations. An equity investment of $1,000,000 combined with equipment lease loans representing assets worth $1,500,000 will be required to achieve the following projected financial results:

	Year 1	*Year 2*	*Year 3*
Revenue:	$2,200,000	$8,800,000	$14,800,000
EBIT:	$ (950,000)	$1,950,000	$ 4,200,000

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ARKET DEVELOPMENT STRATEGY

FAX International's market development strategy is based on expanding into one international market at a time and building traffic to an efficient economy of scale before moving into the next market. FAX International has chosen this conservative strategy based on an analysis of the economic, regulatory, and competitive environments the company is likely to encounter over the next several years. The company's board of advisors has played an instrumental role in providing detailed market and competitive information during the formulation of this strategy.

- *Economics.* The economics of the store-and-forward facsimile business are driven by the need to achieve substantial traffic volume along each selected international route (i.e., the United States to Tokyo, or the United States to London). This economic environment results from the high cost of setting up a digital circuit between two points and the low cost of carrying additional traffic on an already established circuit. Efficient operation of FAX International's network results from carrying 7,000,000 minutes of traffic/year on any given route. For example, variable costs on the United States-Tokyo route drop from $.61/minute to $.31/minute as traffic volume grows from 0 minutes/year to 7,000,000 minutes/year. (See "Market Size" and "Network Economics.") The economics of this industry heavily favor a strategy focused on achieving high traffic volume on each individual route.
- *Regulatory Complexity.* The international regulatory environment has eased dramatically in the last two years. However, the regulatory issues associated with carrying international telecommunications traffic are still complex, cumbersome, and specific to each international market. Each new market represents a commitment of time, money, and management resources to a process that is fraught with uncertainty and delays.
- *Competition.* FAX International anticipates the emergence of a large number of small competitors in the international store-and-forward business as the market develops. The world market for this type of service is large enough to support dozens of small niche players operating on the multiple international routes. In the long run, however, the economics of the industry dictate that the only competitive companies will be those that reach the minimum required economy of scale along a given route. Consolidation is almost guaranteed to occur since increasing volume leads to decreasing variable costs. Those firms which fail to achieve the minimum scale will be faced with an increasingly competitive environment and an inferior cost structure.

In summary, FAX International's analysis reveals that although the opportunity exists to launch a service in multiple markets, the fastest and most conservative route to profitability lies in concentrating on one market at a time. FAX International has decided to address the markets in the order outlined below based on an analysis of each market's size, growth rate, cost of entry, cost of customer acquisition, and short- and long-term profit potential.

- United States to Tokyo.
- Tokyo to the United States.
- London and Paris to the United States.

Market Entry Strategy: The United States to Tokyo

FAX International will utilize a low-price, fast-growth strategy to enter the United States–Tokyo market. This strategy was chosen based on FAX International's analysis of the US telecommunications market and an analysis of MCI's success against AT&T in a similar competitive situation.

The objective is to reach 7,000,000 minutes of traffic per year from the United States to Tokyo as quickly as possible. FCC statistics show that fax traffic on the United States–Japan route has been growing at 30 percent per year and reached 250 million minutes per year in 1990. Traffic on the United States-to-Tokyo route alone is estimated at 175 million minutes per year. FAX International's business plan is based on winning just 4 percent of this clearly defined and highly-focused United States–Tokyo market segment (source: FCC Statistics, "International Message Telephone Service between the United States and Selected Countries, 1957–1989").

MCI successfully proved that business customers in the United States are willing to test new telecommunications services if the cost savings are attractive enough. MCI started in the United States as an unknown and unproven company but their aggressive offer of 30 percent to 50 percent discounts prompted potential customers to take a chance. MCI's low-price, fast-growth strategy allowed it to quickly capture the market share necessary to reach an efficient scale of operations. FAX International will apply a nearly identical strategy in entering the facsimile transmission market.

The FAX International network has been designed from the ground up to meet the needs of US-based customers identified through market research and field interviews. Potential customers have stated they will test and utilize the service if it can deliver the following features:

- 40–60 percent cost savings for business customers of all sizes on calls from the United States to Tokyo.
- No risk trial offer:
  - No installation fees or up-front costs.
  - No change in long-distance carrier required.
  - No employee training needed to use the service.
  - No change in fax equipment required.
  - Free 100-minute test period for every potential customer.

The recessionary economic environment in the United States is the ideal time for FAX International to launch a low-price, fast-growth strategy. The facsimile market between the United States and Tokyo is huge and growing at 30 percent per year. Breaking into a new market is never easy, but the opportunity is clear, the cost savings are clear, the customers are easy to identify, and the timing is perfect.

Japanese Market Entry Strategy

The Japanese telecommunications market is completely different than the US market in terms of customer willingness to test a service from a new and unproven competitor. Japanese customers prefer to work with established Japanese organizations. Breaking into the Japanese market as a small US company has proven over and over again to be almost impossible.

FAX International's strategy for breaking into the Japanese market is to enter into a joint venture agreement with a large Japanese firm that already has access to the target customers in Japan. FAX International is in a position to offer an extremely attractive joint venture opportunity because the network has been designed to carry traffic in both directions simultaneously between the United States and Japan. Once a steady flow of traffic has been developed from the United States to Tokyo, return traffic can be carried at an extremely low variable cost ($.13/minute). By succeeding in the United States–Tokyo market first, FAX International will be in a position to provide a Japanese firm with a complete franchiselike opportunity for carrying fax traffic from Tokyo back to the United States. The Japanese partner will be responsible for marketing the service in Tokyo and providing all customer support. Business customers in Tokyo currently pay $1.20 to $1.60 per minute for facsimile transmission service to the United States. FAX International's current plan is to offer the Japanese partner an opportunity to carry traffic on the network at a cost of just $.35/minute. At this rate, the Japanese partner will be in a position to mark up their cost of goods sold by 100 percent and still offer customers a 40–60 percent savings. At a rate of $.35/minute, FAX International will earn 60 percent gross margins on all return traffic from Tokyo. The profit opportunity is extremely attractive for all parties involved.

FAX International will begin searching for a joint venture partner in early 1992 once the network has been successfully established between the United States and Tokyo. Several options for identifying joint venture partners have already been presented. One option under serious consideration is to hire Mr. Douglas Fine to negotiate and manage the joint venture. Doug Fine has had specific experience in negotiating joint ventures for US firms interested in entering the Japanese market while working for the venture capital arm of Nomura Securities in Tokyo. Doug holds a BS and master's degree in electrical engineering from Stanford University, is a graduate of the Harvard Business School, and is fluent in Japanese.

FAX International's activities in Japan to date have been coordinated through two key relationships that have developed over the past year:

- *Coopers & Lybrand.* The consulting office of Coopers & Lybrand in Tokyo has been responsible for working with FAX International personnel to secure the necessary operating licenses for the company in Japan.
- *KDD.* KDD is Japan's largest international telecommunications carrier. KDD has been selected to provide FAX International's digital communications lines between the United States and Japan in coordination with AT&T. In addition, FAX International's network equipment will be housed in Tokyo within the KDD facilities. The KDD facility provides FAX International with 24-hour network monitoring, 24-hour security, climate control, guaranteed power backup, and other emergency control measures.

London/Paris Market Strategy

FAX International anticipates an opportunity to enter the London and Paris markets simultaneously with a low-price, fast-growth approach identical to the strategy employed in the United States. The geographic proximity of London and Paris will allow these two major markets to be serviced from a single business support office located in London. International facsimile traffic in and out of Great Britain and France is highly concentrated within London and Paris. Rough estimates provided by the consulates of each country show 70 percent or more of each country's international traffic tied to these two cities. Each city will have its own sales office and customer support office, but will share a common business systems office providing billing, accounting, and network management services.

The economic opportunity in both London and Paris is extremely attractive.

In addition to carrying traffic from London and Paris to the United States, the network will be capable of carrying traffic in all directions between London, Paris, and Tokyo. The

	London	Paris
Current business rates to United States:	$1.08/minute	$1.58/minute
FAX International variable cost:	$0.30*	$0.30*
FAX International rate/minute:	$0.60	$0.60
Customer savings:	44%	62%

*Variable costs based on traffic volume of $5 million/year from each city.

economic opportunity along all of these routes is equally attractive to the opportunity outlined above.

MARKET SIZE

The Federal Communications Commission keeps track of the number of direct dial international calls placed every year over the public switched networks. (AT&T, MCI, Sprint, etc.) An analysis of the statistics shows the following trends:

1. Switched international voice traffic is growing at 15–20 percent per year worldwide.
2. Switched international facsimile traffic is growing at more than twice the pace of voice traffic (30–40 percent).
3. Facsimile traffic already accounts for up to 70 percent of the calls on the United States/Japan route and 33 percent on the US/United Kingdom route. These statistics are estimates and are unavailable for most international routes.
4. International traffic is highly concentrated between major US city centers and major international city centers. For example, Tokyo represents almost 70 percent of the traffic in and out of Japan. Similar traffic concentrations exist in London, Paris, Hong Kong, and so forth.

International Direct Dial Calls—Voice and Fax 1990

	Voice and Fax Traffic	Percent Fax	Fax Market
US/Japan (both directions)	560 million minutes/year	70%	390 million
US/Great Britain	1,150 million minutes/year	33	380 million
US/France	390 million minutes/year	N/A	N/A
US/West Germany	700 million minutes/year	N/A	N/A

N/A = not available.

Note: Unlike most telecommunications equipment, the FAX International network has been designed to meet the regulatory requirements of every international phone system. The opportunity exists to expand the service to all of the countries listed above plus many others.

Sources: FCC and June 15, 1990 issue of *EMMS* (Electronic Mail and Micro Systems)

HOW THE NETWORK WORKS

The FAX International network can be broken down into four functional components:

1. Interface with the customer.
2. Collect and distribute documents within a country.
3. Transmit documents to a foreign country.
4. Monitor the status of every document on the network.

Customer Interface

The goal of the customer interface is to allow customers to utilize the FAX International network without changing their current behavior. The expectations of the 100 customers interviewed to date were clear and straightforward. Customers want to dial a phone number into their fax machine and know that the document is going to reach its destination. If the document is destined for Tokyo, then it should be invisibly routed over the FAX International network. If the document is destined for a city not served by FAX International then it should be transmitted via the customer's primary long-distance carrier (AT&T, MCI, Sprint, etc.). FAX International has achieved this goal of invisible performance by incorporating an intelligent auto-dialer into the system. Every fax machine that is signed onto the network will have a programmable auto-dialer attached to the back of the machine. The auto-dialer will determine which fax calls should be routed over FAX International. For example, if a customer enters a phone number destined for Tokyo, the dialer will intercept the call, dial an access number to reach FAX International, and then pass along the following information:

- Customer account number.
- Password.
- Other control information.
- Phone number entered by the customer.

The network will read in the information from the auto-dialer, check to make sure the customer is authorized to use the network, and then issue a fax receive tone to the customer's fax machine. The document will be received into the FAX International network and then forwarded to the appropriate destination country. The auto-dialer is able to perform the tasks outlined above in less time than it takes AT&T to connect an average international call. The customer experiences no delay as a result of the auto-dialer's activities.

t and Distribute Documents within a Country

Customers located anywhere in the United States will be able to access the FAX International network. The capability has been built in to send or receive a document from any fax machine in the United States, but over time the communications assets utilized to accomplish the task will change.

1. *Initial approach*. FAX International will start with a single network node (central node) located in Boston. When a customer in New York City dials a number destined for Japan, the auto-dialer attached to the customer's fax machine will reach FAX International by dialing an 800 number. This type of 800 number access will cost FAX International $.15/minute on average.
2. *Network expansion*. Once the volume of traffic in and out of a given city like New York exceeds 500 minutes per day, a separate network node will be installed in that city. The auto-dialers located in New York City will then be reprogrammed to access FAX International by dialing a local call in New York to reach the network. The document will be received into the New York City node and then transmitted to the central node in Boston over a high-speed digital line. The cost of collecting a document from New York City will then drop to only $.05/minute.

Over time, FAX International will expand the network to include remote nodes all over the country. The same type of expansion will take place in Japan thus allowing the company to reach customers more efficiently. Since the auto-dialers installed at the customer sites can be programmed remotely, customers will not be affected as the network configuration changes and grows.

Transmit Documents to a Foreign Country

Once a document has reached the central node in the United States it will be transmitted to its foreign destination over a dedicated high speed digital line. Dedicated fiber optic based circuits between the United States and Tokyo can be leased from a variety of international carriers, including AT&T, MCI, and Sprint. These lines are billed on a flat monthly charge basis. The line will be dedicated to FAX International and available for simultaneous use in both directions 24 hours a day. The average cost of sending a fax document from the United States to Tokyo over one of these lines depends on two factors:

1. *Size of the fiber optic lines*. Substantial economies of scale result from leasing high-volume lines known as full T1 circuits. A full T1 circuit consists of 24 smaller channels which can be leased one at a time. The first channel between the United States and Tokyo costs $14,500/month to lease. The cost per channel drops consistently as channels are added until the average cost per channel reaches $5,000/month on a full T1 circuit. A traffic volume of 7 million minutes/year is required to efficiently utilize a full T1 circuit between any two points.
2. *Utilization of the T1 line in each direction*. The international T1 circuit utilized by FAX International can carry traffic in both directions simultaneously. The average cost per minute of traffic carried on the circuit will depend on the volume of traffic flowing in each direction. In order to be conservative, the FAX International business plan is based on the full cost of the circuit being covered by traffic running from the United States to Tokyo.

Monitor the Status of Every Document on the Network

Customers demand perfectly accurate, up-to-the-minute information on the status of their documents as they move through the network. The FAX International network has been designed to provide a status update on every document once every five minutes. The information will be used to provide high-quality customer service and to provide customers with up-to-the-minute status on all of the documents entered into the network.

Document status information will be collected at the central node in the United States and forwarded to the company's customer service office. The customer service office can be located anywhere in the United States. Initially it will be located in the Boston area, but if necessity dictates a move to a different location, the operation can be easily relocated.

NETWORK ECONOMICS

The economics of the FAX International network are based on two issues, hardware costs and communications costs. Outlined below is an introduction to the variables which drive these two cost centers. Surprisingly, the network hardware is quite inexpensive when measured by the revenue it produces. The financial plan will show that hardware lease costs end up representing less than 5 percent of gross revenue once the network achieves an efficient operating volume. Communications costs on the other hand are quite expensive since they represent the network's cost of goods sold. Variable communications costs will eventually stabilize to represent 50 percent or less of gross revenue. The hardware costs and communications costs are connected to the extent that the deployment of hardware assets has a direct bearing on the cost of collecting or distributing a fax document within the United States or Japan.

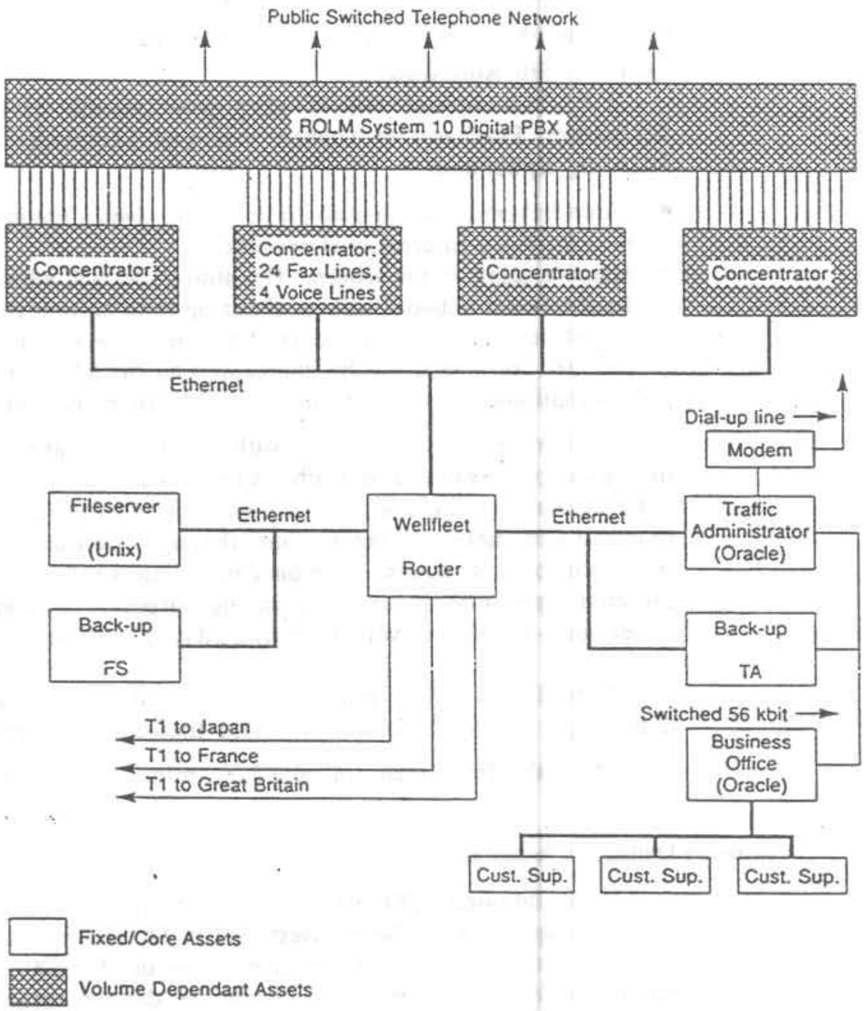
Hardware Costs

The network hardware can be broken into three pieces:

- Fixed/core network hardware and software.
- Variable network hardware and software.
- Customer-based auto-dialers.

The hardware block diagram provides a graphic representation of the central processing nodes that will be installed in both the United States and Tokyo (see *Exhibit A*). All of the equipment shown will be leased rather than purchased by FAX International. The company is currently working with a leasing operation located in Boston called TLP Leasing Programs, Inc.

Exhibit A
Central Node: Hardware Block Diagram


Public Switched Telephone Network
ROLM System 10 Digital PBX
Concentrator
Concentrator: 24 Fax Lines, 4 Voice Lines
Concentrator
Concentrator
Ethernet
Dial-up line
Modem
Fileserver (Unix)
Ethernet
Wellfleet Router
Ethernet
Traffic Administrator (Oracle)
Back-up FS
Back-up TA
Switched 56 kbit
Business Office (Oracle)
T1 to Japan
T1 to France
T1 to Great Britain
Cust. Sup.
Cust. Sup.
Cust. Sup.
Fixed/Core Assets
Volume Dependant Assets

Fixed Network Hardware/Software

A fixed core investment is required to allow the company to function properly. The core system includes all of the hardware and software necessary to provide the following system features:

- Efficient document transmission.
- Critical asset redundancy.
- Customer service and support system.
- Sales support and Customer Installation system.
- Network management system.
- Business management software (includes automated billing).
- Core system investment: $300,000.

Variable Network Hardware

The second component of the network varies depending on the volume of traffic carried daily. As traffic volume increases, additional fax lines will be added to the central node and to the remote city nodes around the United States and Japan. Additional capacity can be added in units of 5,000 traffic minutes per day.

- Additional investment required for each additional 5,000 minutes/day: $45,000.

Customer Site Auto-dialers

FAX International will be using programmable auto-dialers produced by MITEL Electronics. Purchased in volume, they cost $125/dialer. The auto-dialers provide the following capabilities:

- *Fraud prevention*. Each auto-dialer will be given a unique password to use when dialing into the FAX International network.
- *Invisible access to the network*. The auto-dialer will allow customers to utilize the FAX International network without changing their current routine. A customer simply dials a destination phone number on a fax machine and hits the start button. Documents destined for Tokyo will be intercepted by the auto-dialer and passed on to the FAX International network automatically. The process is completely invisible to the customer.

Customers will be provided with a certain number of free auto-dialers based on their average daily volume of traffic. A free auto-dialer will be provided for every 10 minutes of traffic per day. This policy is designed to deter customers from asking FAX International to install auto-dialers on fax machines that are rarely used for international transmissions. At the customer's request, additional auto-dialers will be provided for a rental fee rate of $10/month per auto-dialer. For planning purposes, the company has planned to provide a free auto-dialer for every 10 minutes/day of additional traffic that is signed onto the network.

Auto-dialers will be purchased in units of 500 dialers. If each dialer represents 10 minutes per day of traffic and costs $125 then the following cost structure results.

- Auto-dialer Investment for each 5,000 minutes/day of traffic: $62,500.

Hardware Utilization Analysis

Each additional 5,000 minutes per day of traffic that is added to the FAX International network requires a hardware investment of $45,000 in network hardware and $62,500 in customer auto-dialers, for a total investment of $107,500. At an average rate of $.74 per minute to Tokyo, 5,000 minutes of traffic per day represents $890,000 per year of revenue, assuming 20 business days per month.

An investment of $107,500 in hardware and software that has a useful life of at least three years will generate $890,000 per year in incremental revenue. The asset intensity of this network is extremely low.

munications Costs

FAX International has the option to purchase its fiber optic communications lines from a variety of common carriers, including AT&T, MCI, Sprint, Cable & Wireless, and many other less well-known carriers. Transmitting a document between the United States and Tokyo involves three types of communications costs:

1. Local reception or delivery in the United States:
   a. Minimum $.09/minute.
   b. Maximum $.15/minute.
   c. Average cost will drop as volume grows.
2. Transmission from the United States to Tokyo:
   a. Minimum $.20/minute.
   b. Maximum $.43/minute.
   c. Average cost will drop as volume grows.
3. Local reception or delivery in Tokyo: Average $.03/minute regardless of volume.

Substantial economies of scale result from reaching a minimum volume of 7 million minutes of traffic/year on the network. A company operating in this market at a low volume (less than 1 million minutes/year) will be faced with variable costs of $.61/minute. Alternatively, a company operating at a volume of 7 million minutes per year will face a variable cost of just $.31/minute. These variable cost figures are based on carrying traffic in one direction only. The international leased circuit between the United States and Tokyo is capable of carrying traffic in two directions simultaneously. As a result, once traffic has been developed in one direction, the network is capable of carrying return traffic at very low variable cost.

The following *Table 1* and *Table 2* summarize the variable cost structure that FAX International will face at different levels of traffic volume.

e 1
able Costs—United States to Tokyo

ffic Volume	*US Reception*	*Transmit to Tokyo*	*Local Delivery in Tokyo*	*Total*
0,000 min/yr	$.15	$.43	$.03	$.61
00,000	$.15	$.34	$.03	$.52
00,000	$.09	$.28	$.03	$.40
00,000	$.09	$.24	$.03	$.36
00,000	$.09	$.20	$.03	$.32

le 2
rn Traffic Variable Costs—Tokyo to the United States

ffic Volume	*Tokyo Reception*	*Transmit to the United States*	*Local Delivery in the United States*	*Total*
0,000 min/yr	Free	Free	$.14	$.14
000,000	Free	Free	$.13	$.13
000,000	Free	Free	$.13	$.13
000,000	Free	Free	$.13	$.13
000,000	Free	Free	$.13	$.13

TECHNOLOGY

Dr. Thomas P. Sosnowski, PhD, is responsible for the network design and development effort. Dr. Sosnowski (Tom), age 54, has worked his entire career in telecommunications development, including 13 years at AT&T's Bell Labs.

Network Systems

The following network systems are currently under development at FAX International:

1. *Communications network.* A fiber optic based network that can move a fax document between the United States and any foreign country seven times as efficiently as the AT&T switched voice network.
2. *Customer interface*. A system that will allow FAX International to invisibly route specific documents from a customer's fax machine onto the network. The goal is to ensure that the process of using the FAX International network is completely invisible to a customer sending a fax to Tokyo.
3. *Sales support.* A sales rep support system based on a portable PC platform that will dramatically increase the efficiency of the field sales force.
   - *a.* Lead management and tracking software.
   - *b.* Automated customer installation system.
   - *c.* Automated proposal generation.
4. *Customer service.* A system that will automatically identify service problems, suggest solutions, and assist service reps in contacting the affected customers before the customer even knows a problem exists.
5. *Network management.* A system to allow an operator to sit at a terminal in Boston and monitor the behavior of every piece of network equipment worldwide.
6. *Business management.* A system to provide the FAX International management team with access to the following information on a daily basis:
   - *a*. Network asset utilization.
   - *b.* Customer behavior statistics.
   - *c.* Sales rep productivity.
   - *d.* Customer service rep productivity.
   - *e.* Billing/accounting data.
7. *Integrated billing and accounting system.* A system to automate the entire billing and accounting cycle under the ORACLE relational database management program. Customer bills will be generated automatically by the network and entered into the integrated accounting system.

Development Philosophy

Tom Sosnowski and his development team are dedicated to producing a network that is capable of meeting the full range of business objectives set out for FAX International. Outlined below are some of the design tenets that have been used to guide the development process:

1. Utilize standard off-the-shelf technology wherever possible. Never make what you can buy.
2. Efficient technical development results from extensive planning. Project costs are projected based on an average of 80 percent planning and 20 percent implementation.
3. The design and construction of the network should be focused on meeting the specific needs of the customers, the sales force, and the customer service reps, not on potential technological capabilities.

4. Develop a hardware and software architecture that can incorporate frequent changes in customer demands.
5. Build the network in a modular fashion so that it can grow as quickly as the business requires.

SALES STRATEGY

The FAX International sales strategy has been designed around one primary goal:

Make it easy for customers of all sizes to say yes to a free test of the service. Once customers have tested the network, they will sign up for the service if it successfully provides the following features and benefits:

- High quality, reliable service.
- 40 percent to 60 percent savings.
- No up front fees.
- No training or change in behavior.
- No change in equipment.
- No change in long-distance carrier.

The FAX International sales organization will be based around a sales force of six field sales reps located in Los Angeles, San Francisco, and New York City. Although the FAX International sales presentation is simple enough to be delivered via a telemarketing operation, a field sales force approach has been selected for the following reasons:

1. *On-site installations required*. Signing up a customer to use the network involves attaching auto-dialers to each of the customer's fax machines and entering information about each user into the FAX International database. Gathering accurate information during the installation process is crucial to the efficient operation of the business. FAX International explored several opportunities to use third-party organizations for installation work but opted against this approach.
2. *Highly concentrated customer base*. FAX International sales reps will be pursuing leads provided by a directory, *Japanese Affiliated Companies in the US*, published by the Japanese External Trade Organization. This directory list 9,000 Japanese-affiliated firms in the United States. Over half of these leads are located in New York City, Los Angeles, and San Francisco. FAX International further estimates that over 80 percent of the decision makers for the 9,000 listed organizations are located in these three cities. The definition of a Japanese-affiliated firm is one that is at least 10 percent owned by a Japanese firm.

Convincing customers to accept a free, no-risk test of the network is the primary job of the field sales organization. Once a customer has agreed to a free test, the network will sell itself based on the performance of the system. Convincing customers to test the service is dependent on FAX International's cutting through the confusion and clutter created by the intense competition in the United States between MCI, Sprint, and AT&T.

FAX International is not offering a typical long-distance service, and the company cannot afford to let customers categorize the service as being similar to MCI, Sprint, and so on. FAX International is offering a totally different service concept which offers customers both superior service and superior price with no risk to the customer's organization. FAX International's sales presentation and promotional material have been designed to transmit the following five points:

1. *Totally different communications concept*. The FAX International network is seven times more efficient at transmitting a fax document than the voice network of AT&T, MCI,

or Sprint. Comparing a highly specialized service like FAX International to AT&T, MCI, or Sprint is like comparing Federal Express to the US Post Office.

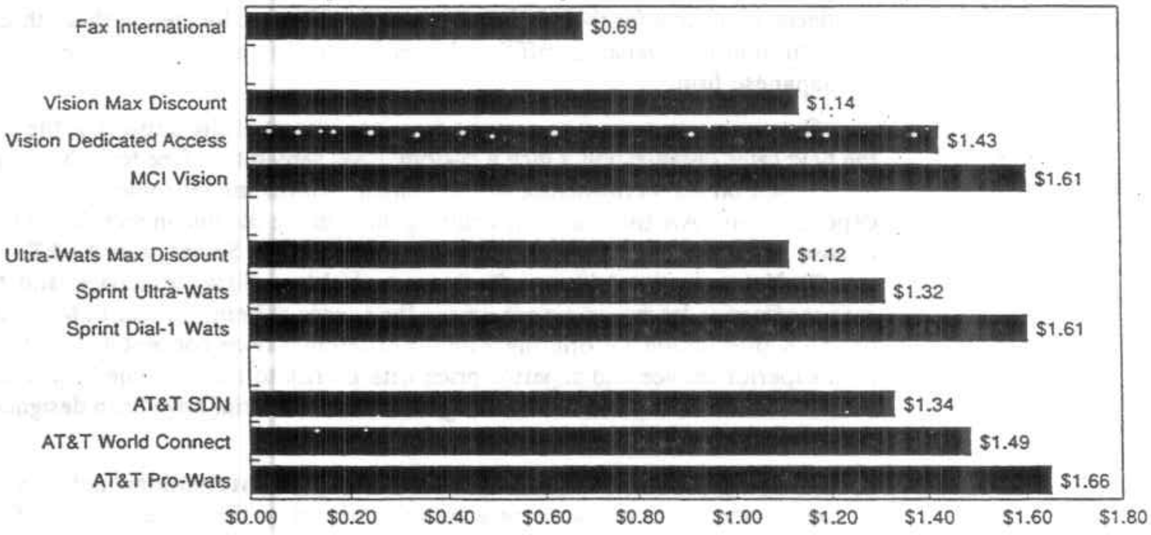
2. *Better service*. The FAX International network has been designed to simplify life for heavy fax users:
   - –Automatic redialing of busy numbers.
   - –Delayed delivery and priority delivery options.
   - –Broadcast distribution.
   - –Enhanced billing functions.
3. *Better price*. FAX International's introductory offer of $.69 per minute to Tokyo represents a 40–60 percent cost savings for customers of all sizes. AT&T, MCI, Sprint, and others charge between $1.80 and $2.75 for the first minute of a call to Tokyo and $.90 to $1.15 for each additional minute during business hours.
4. *No-risk decision*. FAX International customers do not have to change their primary long-distance carrier. Only those fax calls destined for Tokyo or other cities serviced by FAX International will be routed over the network. All other fax calls will be transmitted by the customer's primary long-distance carrier. In most situations the customer's primary long-distance carrier won't even know that FAX International exists.
5. *Free test opportunity for qualified customers*. Customer interviews have shown that the biggest barrier to accepting the service is a fear that the network will not function as advertised. To combat this primary objection, FAX International will offer customers 100 free minutes of digital fax service to Tokyo from a single fax machine, with no strings attached.

PRICE COMPARISON

FAX International, Inc. pricing structure:

- *Small customers* (below $500/month): $.79/minute (billed in six-second increments).
- *Large customers* (above $500/month): $.69/minute.
- *Auto-dialer rental fee:* Customers will receive a free auto-dialer for every fax machine that transmits an average of 10 minutes of traffic/business day over the network. Additional auto-dialers will be provided at a rental rate of $10/month. Note: Auto-dialers cost FAX International $125/unit.

Price/minute comparison for an average three-minute fax call to Tokyo:



ES EXPECTATIONS

FAX International field sales reps will be responsible for qualifying accounts, setting up network demonstrations, installing free tests, and closing sales. The sales cycle is short and clearly defined. The profile of an ideal sales rep for FAX International is a young, successful sales person who has proven abilities to qualify accounts, set up meetings, and close sales. Top performers in the telecommunications industry in similar sales environments earn $40,000, including bonuses and commissions. FAX International's goal is to take six of these superior performers and offer them a base salary of $36,000 with an opportunity to earn $60,000 or more.

Monthly sales goals have been set with the following expectations in mind:

1. *5 to 10 new accounts per month*. The definition of an account is a single customer location that sends at least 25 minutes of traffic per day to Tokyo. Most of the customers contacted by FAX International will operate out of multiple offices in the United States. As a result, each sales presentation has the potential to result in sales to multiple locations.
2. *350 minutes/day of new traffic each month*. An average customer office location is expected to generate between 35 and 70 minutes of traffic per day. Interviews with 100 customers showed a range of 10 to 500 minutes of traffic per day from a single customer location.
3. *$700,000 in net new business per year*. The aggregate goal for the year is to sign up at least 4,000 minutes/day of new traffic. The potential exists to sign-up a single customer that represents 1,000 minutes/day or more from a combination of multiple locations. For example, Nippon Express is one of the companies that has expressed great interest in testing the service. The Boston office of Nippon Express sends 125 pages per day to Tokyo and they repercesent just 1 of 17 US offices.

Field sales reps will be responsible for working with accounts located within driving distance of their assigned metropolitan area. All sales contacts made outside of the assigned area will be passed on to corporate headquarters. Installations at remote customer sites will be handled by a sales rep working out of the Boston office and travelling around the country.

APETITION

FAX International's business plan has been developed with the assumption that competition will develop over the next few years from two sources: small niche players similar to FAX International and full-service common carriers like AT&T, MCI, and Sprint. In the near term a large number of small companies are likely to enter the market with a variety of technical approaches and service offerings. All of these companies will be able to move fax documents more efficiently than the international switched voice networks, and most of these competitors will succeed in winning customers. AT&T, MCI, and Sprint are expected to enter the market once FAX International and others have proven that a large market exists for store and forward fax networks. In the interim, AT&T, MCI, and Sprint are expected to maintain the status quo since they currently control almost 100 percent of the international facsimile market and any reduction in price would come directly off their bottom lines.

Niche players: The international store and forward fax market has the potential to support dozens of small niche players operating on the multiple international routes. The opportunity has just recently been defined and as a result no standards of excellence have been established. FAX International anticipates the emergence of a large number of entrants each applying a different technology, service, and marketing approach in an attempt to find out what the customers are willing to buy. A limited number of these companies will enjoy great success and as a result will define standards for the industry. Success will be based on how well the networks function, how closely the service offerings meet the needs of the customers, and the efficiency of the sales/marketing approach applied. FAX International has designed a network and series of business support systems that will allow the company to refine its approach quickly to meet the needs of the market.

AT&T, MCI, and Sprint: All three of these companies have the technology and resources required to dominate this new market, but none of these companies has the incentive. All three companies know that if one enters the market the other two will follow immediately. The result will be a quick drop in revenue for all three companies with no change in market share or competitive advantage. FAX International anticipates that all three competitors will prepare the necessary technology to compete in the market but will avoid entry until FAX International and several other players develop the market and capture substantial market share.

AT&T, MCI, and Sprint represent both a threat and an opportunity to FAX International. Once FAX International reaches 7,000,000 minutes ($5,000,000) of traffic/year on the United States–Tokyo route, the company will be in a position to operate profitably no matter who enters the market. FAX International expects to grow far beyond this minimum required level in several markets before any major competitor presents a competing offer. If AT&T, MCI, and Sprint enter the market, a furious fight for market share is likely to ensue. All of those niche players that failed to reach the minimum required economy of scale will be forced out of the market. FAX International on the other hand should be in the enviable position of being able to sell out at a premium to one of several companies eager to build market share quickly.

FAX INTERNATIONAL TEAM

- *Douglas J. Ranalli*: president/founder, age 30. Mr. Ranalli brings a combination of marketing, entrepreneurial, and engineering skills to the organization. Past experience includes five years as the Founder/Publisher of *Student Life* magazine. Mr. Ranalli built *Student Life* to a national circulation of 1,200,000 copies per issue before selling to Time, Inc., in 1987 for a multiple of 1.3 times revenue. Educational background: MBA, Harvard Business School (Baker Scholar); BS, Cornell University, industrial engineering.
- *Dr. Thomas P. Sosnowski*: vice president and director of engineering, age 54. Dr. Sosnowski is an engineering project management and product development specialist in the communications industry. Tom's background in telecommunications includes 13 years in R&D at Bell Laboratories.
- *Steven Lanzilla*: US sales manager, age 37. Mr. Lanzilla brings 17 years of sales experience in telecommunications to the FAX International team. In particular, Steven's experience includes four years of sales, sales management, and product development experience at US Sprint. Currently Steven is a telecommunications consultant in Boston.
- *Steven Orr*: UNIX system designer, age 38. Mr. Orr is a UNIX systems development consultant on PC platforms. Steve is responsible for system design, testing, and redundancy analysis.
- *Tom Flaherty*: database development and administration, age 32. Mr. Flaherty is a relational database programming expert specializing in the ORACLE RDMS. Tom is responsible for all database management, which includes information for billing, accounting, customer service, network management, and sales support.
- *Michael Landino*: database development, age 26. Michael is an ORACLE programmer specializing in SQL Forms 3.0 development.

- *Bradlee T. Howe*: chief financial officer (CFO), age 50. Mr. Howe is the president of Financial Managers Trust of Cambridge, Massachusetts, a company which serves as the part-time CFO for high-tech start-ups and smaller corporations.
- *James O. Jacoby, Jr.*: finance consultant, age 28. Mr. Jacoby is employed full-time by the Corporate Finance Department of Chemical Bank in New York City. Jim will be assisting FAX International in the two critical areas of fund-raising and bank relationship management. Jim's background includes a finance degree from Notre Dame and an MBA from Harvard.
- *Barry Nearhos:* accountant, Coopers & Lybrand. Mr. Nearhos is a partner in the Emerging Business Group in the C&L Boston office.
- *Steve Snyder:* lawyer. Mr. Snyder is a partner at O'Connor, Broude, and Snyder in Waltham, Massachusetts, specializing in high-tech start-ups.

AX INTERNATIONAL ADVISORY BOARD

- *Mike Williams*: age 53. Mr. Williams retired from AT&T in 1990 after a 29-year career and now resides in Tucson, Arizona. Recent positions within AT&T included President of the AT&T—Americas subsidiary, and chief negotiator for AT&T's first joint venture in Japan.
- *Kurt Weidenhaupt*: age 52. Mr. Weidenhaupt is a German national and President of AEG of North America, a subsidiary of Daimler-Benz. Mr. Weidenhaupt's career has encompassed numerous international assignments, including 13 years in London.
- *Robert Casale*: age 52. Mr. Casale's career has included senior executive positions in both the communications and financial services industry. Currently, Mr. Casale is the president of ADP's Brokerage Information Services Group in Journal Square, New Jersey.
- *Jerry Johnson*: age 54. A retired AT&T mergers and acquisitions executive, Mr. Johnson is now managing partner of the MJI consulting firm in Stamford, Connecticut. MJI specializes in forming strategic alliances within the telecommunications industry.
- *Bob Petzinger:* age 51. Mr. Petzinger retired from AT&T in 1990 and now resides in Naples, Florida. Mr. Petzinger's most recent position was as director of AT&T's operations in the United Kingdom.

FINANCIAL PROJECTIONS

Year 1 Statement of Operations

	1991					1992							
	Aug.	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*Jul.*	*Total year*
Net sales	$0	$0	$0	$73,260	$114,286	$155,311	$196,337	$237,362	$278,388	$319,414	$377,939	$431,215	$2,183,512
Operating expenses:													
Cost of communications	500	1,000	2,000	64,500	85,680	107,060	129,490	127,120	143,800	158,680	182,010	197,815	1,199,655
Administrative expenses	38,850	10,050	10,050	10,100	10,100	10,150	10,200	10,250	10,250	10,300	10,300	10,350	150,950
Billing and accounting expenses	500	5,520	5,520	7,487	7,580	8,023	13,067	13,660	13,753	13,847	13,940	14,033	116,930
Sales expenses	11,750	64,500	50,500	54,163	56,214	58,266	60,317	62,368	64,419	66,471	68,522	70,573	688,063
Japanese J/V expenses	0	0	0	0	0	10,000	0	10,000	20,000	10,000	10,000	10,000	70,000
Customer service	2,500	2,500	2,500	5,000	5,000	7,500	9,000	10,500	10,500	12,000	12,000	13,500	92,500
Lease expense	1,656	31,356	13,967	24,498	17,942	24,047	26,461	23,596	29,700	32,114	34,529	36,943	296,809
Technical expenses	21,700	21,700	143,200	33,200	33,200	34,700	39,700	36,200	36,200	36,200	36,200	36,200	508,400
Total expenses	77,456	136,626	227,737	198,947	215,717	259,746	288,235	293,694	328,623	339,612	367,501	389,415	3,123,307
EBITDA	(77,456)	(136,626)	(227,737)	(125,687)	(101,431)	(104,434)	(91,898)	(56,331)	(50,235)	(20,198)	10,438	41,800	(939,796)
Depreciation/amortization	0	0	0	0	0	0	0	0	0	0	0	0	0
Corporate expenses	0	0	0	0	0	0	0	0	0	0	0	0	0
EBIT	(77,456)	(136,626)	(227,737)	(125,687)	(101,431)	(104,434)	(91,898)	(56,331)	(50,235)	(20,198)	10,438	41,800	(939,796)
Other income (expense):													
Cash interest income	0	0	0	0	0	0	0	0	0	0	0	0	0
Revolver interest (11%)	0	0	0	0	0	0	0	0	(14)	(567)	(847)	(904)	(2,332)
Extraordinary items	0	0	0	0	0	0	0	0	0	0	0	0	0
Other (expenses) income	0	0	0	0	0	0	0	0	0	0	0	0	0
Total other income (expenses)	0	0	0	0	0	0	0	0	(14)	(567)	(847)	(904)	(2,332)
EBT	(77,456)	(136,626)	(227,737)	(125,687)	(101,431)	(104,434)	(91,898)	(56,331)	(50,249)	(20,765)	9,591	40,896	(942,128)
Income taxes	0	0	0	0	0	0	0	0	0	0	0	0	0
Net income	($77,456)	($136,626)	($227,737)	($125,687)	($101,431)	($104,434)	($91,898)	($56,331)	($50,249)	($20,765)	$9,591	$40,896	($942,128)
Cumulative NOLs	(77,456)	(214,083)	(441,819)	(567,507)	(668,938)	(773,372)	(865,270)	(921,601)	(971,849)	(992,615)	(983,024)	(942,128)	

EBITDA = earnings before interest, tax, depreciation, and amortization; EBIT = earnings before interest and tax; NOL = net operating loss.

Year 1 Balance Sheet

	1991 Aug.	Sept.	Oct.	Nov.	Dec.	1992 Jan.	Feb.	Mar.	Apr.	May	June	Jul.
Assets												
Current assets:												
Cash	$923,037	$786,904	$560,153	$427,516	$312,226	$196,181	$95,759	$10,000	$10,000	$10,000	$10,000	$10,000
Invested cash	0	0	0	0	0	0	0	0	0	0	0	0
Accounts receivable	0	0	0	72,256	112,720	153,184	193,647	234,111	274,574	315,038	372,762	425,308
Total current assets	923,037	786,904	560,153	499,773	424,946	349,364	289,406	244,111	284,574	325,038	382,762	435,308
Long-term assets:												
Capital leases costs, net	0	0	0	0	0	0	0	0	0	0	0	0
Net property, plant, and equipment	0	0	0	0	0	0	0	0	0	0	0	0
Intangibles	0	0	0	0	0	0	0	0	0	0	0	0
Organizational expenses	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Total assets	$1,073,037	$936,904	$710,153	$649,773	$574,946	$499,364	$439,406	$394,111	$434,574	$475,038	$532,762	$585,308
Liabilities												
Accounts payable	$493	$986	$1,973	$63,616	$84,506	$105,593	$127,716	$125,379	$141,830	$156,506	$179,517	$195,105
Accrued expenses	0	0	0	3,663	9,377	17,143	26,960	38,828	52,747	68,718	87,615	109,176
Revolving facility	0	0	0	0	0	0	0	1,505	61,847	92,429	98,654	73,155
Other current/CMLTD	0	0	0	0	0	0	0	0	0	0	0	0
Total current liabilities	493	986	1,973	67,279	93,884	122,376	154,676	165,712	256,424	317,653	365,785	377,436
Total liabilities	$493	$986	$1,973	$67,279	$93,884	$122,736	$154,676	$165,712	$256,424	$317,653	$365,785	$377,436
Shareholders' equity												
Founders' invested capital	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Additional paid-in capital	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Retained earnings	(77,456)	(214,083)	(441,819)	(567,507)	(668,938)	(773,372)	(865,270)	(921,601)	(971,849)	(992,615)	(983,024)	(942,128)
Total shareholders' equity	1,072,544	935,918	708,181	582,493	481,062	376,628	284,730	228,399	178,151	157,385	166,976	207,872
Total liabilities and shareholders' equity	$1,073,037	$936,904	$710,153	$649,773	$574,946	$499,364	$439,406	$394,111	$434,574	$475,038	$532,762	$585,308

Year 1 Statement of Cash Flow

	1991 Aug.	Sept.	Oct.	Nov.	Dec.	1992 Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Total Year
Net Income	($77,456)	($136,626)	($227,737)	($125,687)	($101,431)	($104,434)	($91,898)	($56,331)	($50,249)	($20,765)	$9,591	$40,896	($942,128)
Depreciation/amortization	0	0	0	0	0	0	0	0	0	0	0	0	0
Other adjustments	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross cash flow	(77,456)	(136,626)	(227,737)	(125,687)	(101,431)	(104,434)	(91,898)	(56,331)	(50,249)	(20,765)	9,591	40,896	(942,128)
Changes in working capital													
Accounts receivable	0	0	0	(72,256)	(40,464)	(40,464)	(40,464)	(40,464)	(40,464)	(40,464)	(57,724)	(52,546)	(425,308)
Accounts payable	493	493	986	61,644	20,890	21,087	22,123	(2,338)	16,452	14,676	23,010	15,588	195,105
Accrued commissions	0	0	0	3,663	5,714	7,766	9,817	11,868	13,919	15,971	18,897	21,561	109,176
Other current liabilities	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash flow from operations	(76,963)	(136,133)	(226,750)	(132,637)	(115,290)	(116,045)	(100,422)	(87,264)	(60,341)	(30,582)	(6,225)	25,499	(1,063,155)
Capital expenditures	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating cash flow	(76,963)	(136,133)	(226,750)	(132,637)	(115,290)	(116,045)	(100,422)	(87,264)	(60,341)	(30,582)	(6,225)	25,499	(1,063,155)
Changes in nonoperations items													
Change in capital stock	1,000,000	0	0	0	0	0	0	0	0	0	0	0	1,000,000
Cash available	$923,037	($136,133)	($226,750)	($132,637)	($115,290)	($116,045)	($100,422)	($87,264)	($60,341)	($30,582)	($6,225)	$25,499	($63,155)
Cumulative cash	923,037	786,904	560,153	427,516	312,226	196,181	95,759	8,495	(51,847)	(82,429)	(88,654)	(63,155)	
Maintenance cash level	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	

Year 1 Assumptions and Ratios

	1991					1992						
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jul.
Income statement:												
Net monthly sales growth				N/A	56%	36%	26%	21%	17%	15%	18%	14%
Current gross margin				12%	25%	31%	34%	46%	48%	50%	52%	54%
Current EBITDA margin				−172%	−89%	−67%	−47%	−24%	−18%	−6%	3%	10%
Communication as percentage of sales				88%	75%	69%	66%	54%	52%	50%	48%	46%
Administrative as percentage of sales				14%	9%	7%	5%	4%	4%	3%	3%	2%
Sales expense as percentage of sales				74%	49%	38%	31%	26%	23%	21%	18%	16%
Customer service as percentage of sales				7%	4%	5%	5%	4%	4%	4%	3%	3%
Leases as percentage of sales				33%	16%	15%	13%	10%	11%	10%	9%	9%
Technical costs as percentage of sales				45%	29%	22%	20%	15%	13%	11%	10%	8%
Balance sheet:												
A/R days	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
A/P days	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Revolver as percentage of receivable base				0.00%	0.00%	0.00%	0.00%	0.64%	22.52%	29.34%	26.47%	17.20%

Year 1 Revenue Breakdown

	1991					1992							
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Total Year
United States:													
Avg price/minute	$0.74												
Monthly growth rate	350 minutes/salesrep												
Free minutes/day	0	0	0	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Net new minutes/day	0	0	0	5,000	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	
Total paid minutes/day	0	0	0	5,000	7,800	10,600	13,400	16,200	19,000	21,800	24,600	27,400	
Total minutes/month (20 days)	0	0	0	100,000	156,000	212,000	268,000	324,000	380,000	436,000	492,000	548,000	2,916,000
Monthly gross revenue	0	0	0	74,000	115,440	156,880	198,320	239,760	281,200	322,640	364,080	405,520	2,157,840
Uncollectables (1%)	0	0	0	740	1,154	1,569	1,983	2,398	2,812	3,226	3,641	4,055	21,578
Net monthly US revenue	$0	$0	$0	$73,260	$114,286	$155,311	$196,337	$237,362	$278,388	$319,414	$360,439	$401,465	2,138,262
Japan joint venture:													
Avg price/minute	$0.35												
Total minutes/month	0	0	0	0	0	0	0	0	0	0	50,000	85,000	135,000
Net Japanese revenue	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$17,500	$29,750	47,250
Total US/Japan revenues	$0	$0	$0	$73,260	$114,286	$155,311	$196,337	$237,362	$278,388	$319,414	$377,939	$431,215	$2,183,512

Year 1 Expense Breakdown

	1991 Aug.	Sept.	Oct.	Nov.	Dec.	1992 Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Total Year
Technical development:													
Dr. Tom Sosnowski	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$72,000
Tom Flaherty (Oracle)	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	50,400
Steve Orr (UNIX)	6,000	6,000	6,000	6,000	6,000	7,500	7,500	7,500	7,500	7,500	7,500	7,500	82,500
Michael Landino (Oracle)	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	42,000
Contract programmers	0	0	0	0	0	0	0	0	0	0	0	0	0
Tokyo engineer	0	0	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	15,000
Equipment housing expenses	0	0	0	10,000	10,000	10,000	10,000	11,500	11,500	11,500	11,5000	11,500	97,500
Installation expenses	0	0	120,000	0	0	0	5,000	0	0	0	0	0	125,000
Other expenses	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	24,000
Subtotal	21,700	21,700	143,200	33,200	33,200	34,700	39,700	36,200	36,200	36,200	36,200	36,200	508,400
Sales expenses:													
Doug Ranalli	0	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	55,000
Steve Lanzilla—VP sales	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000
LA sales reps (2)	0	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	66,000
San Francisco reps (2)	0	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	66,000
NYC sales reps (2)	0	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	66,000
National accounts sales rep	0	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	33,000
Sales commissions (5%)	0	0	0	3,663	5,714	7,766	9,817	11,868	13,919	15,971	18,022	20,073	106,813
Sales office space	750	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	50,250
Sales expenses	6,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	160,000
Marketing/office supplies	0	5,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	15,000
Headhunter fees	0	10,000	0	0	0	0	0	0	0	0	0	0	10,000
Total sales personnel	1	8	8	8	8	8	8	8	8	8	8	8	
Subtotal	11,750	64,500	50,500	54,163	56,214	58,266	60,317	62,368	64,419	66,471	68,522	70,573	688,063
Japanese joint venture:													
Doug Fine	0	0	0	0	0	0	0	5,000	5,000	5,000	5,000	5,000	25,000
Chuo Coopers & Lybrand	0	0	0	0	0	10,000	0	0	10,000	0	0	0	20,000
Performance Bonuses	0	0	0	0	0	0	0	0	0	0	0	0	0
Expenses	0	0	0	0	0	0	0	5,000	5,000	5,000	5,000	5,000	25,000
Subtotal	0	0	0	0	0	10,000	0	10,000	20,000	10,000	10,000	10,000	70,000
Network assets:													
Network hardware lease	1,500	9,600	9,600	12,480	12,480	13,920	15,360	15,360	16,800	18,240	18,240	19,680	163,260
Japanese J/V hardware	0	0	0	0	0	0	0	0	0	0	1,440	1,440	2,880
Auto-dialer lease	0	0	1,600	2,347	3,093	3,840	4,587	5,333	6,080	6,827	7,573	8,320	49,600
Up-front lease deposits	0	8,100	1,600	3,627	747	2,187	2,187	747	2,187	2,187	2,187	2,187	27,940
Extended service contract	117	750	875	1,158	1,217	1,388	1,558	1,617	1,788	1,958	2,129	2,300	16,855
Import duties	0	12,656	0	4,500	0	2,250	2,250	0	2,250	2,250	2,250	2,250	30,656
Equipment insurance	39	250	292	386	406	463	519	539	596	653	710	767	5,618
Operating leases	1,656	31,356	13,967	24,498	17,942	24,047	26,461	23,596	29,700	32,114	34,529	36,943	296,809
Network asset value	46,875	300,000	350,000	463,333	486,667	555,000	623,333	646,667	715,000	783,333	851,667	920,000	

	1991					1992							
	Aug.	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*Jul.*	*Total Year*
Communications expenses:													
Network Demonstrations	$500	$1,000	$2,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,500
Avg Variable Cost/Min	$0.18	$0.18	$0.18	$0.18	$0.18	$0.18	$0.18	$0.13	$0.13	$0.13	$0.13	$0.13	
Monthly U.S. Variable Costs	0	0	0	21,600	31,680	41,760	51,840	44,720	52,000	59,280	66,560	73,840	443,280
Monthly Japanese JV Costs	0	0	0	0	0	0	0	0	0	0	6,750	11,475	18,225
Number of 64kbps Channels	0	0	0	4	6	8	10	11	13	15	17	18	
Fractional T1	0	0	0	30,400	41,800	52,250	64,600	69,350	77,900	85,500	93,100	96,900	611,800
Switched Digital Service	0	0	0	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	43,200
Local Loop Service	0	0	0	4,700	6,400	7,250	7,250	7,250	8,100	8,100	9,800	9,800	68,650
Installation Expenses	0	0	0	3,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	11,000
Subtotal	500	1,000	2,000	64,500	85,680	107,060	129,490	127,120	143,800	158,680	182,010	197,815	1,199,655
Customer Service:													
Carla Ferrara (CSR)	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	24,000
Add'l full-time reps	0	0	0	0	0	2,000	2,000	2,000	2,000	2,000	2,000	2,000	14,000
Peak period service reps	0	0	0	0	0	0	1,000	2,000	2,000	3,000	3,000	4,000	15,000
Evening service rep	0	0	0	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	18,000
Expenses	500	500	500	1,000	1,000	1,500	2,000	2,500	2,500	3,000	3,000	3,500	21,500
Number of service personnel	1	1	1	2	2	3	4	5	5	6	6	7	
Subtotal	2,500	2,500	2,500	5,000	5,000	7,500	9,000	10,500	10,500	12,000	12,000	13,500	92,500
Administrative expenses:													
Headquarters office space	350	2,550	2,550	2,600	2,600	2,650	2,700	2,750	2,750	2,800	2,800	2,850	29,950
Furniture lease	0	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	11,000
Legal and accounting consultants	30,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	52,000
Financial consulting	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	24,000
Office supplies, etc.	5,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	16,000
Other expenses	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	18,000
Subtotal	38,850	10,050	10,050	10,100	10,100	10,150	10,200	10,250	10,250	10,300	10,300	10,350	150,950
Billing and accounting													
Payroll expenses	0	5,020	5,020	5,320	5,320	5,670	6,120	6,620	6,620	6,620	6,620	6,620	65,570
Bookkeeper	500	500	500	1,500	1,500	1,500	3,000	3,000	3,000	3,000	3,000	3,000	24,000
Credit/collections person	0	0	0	0	0	0	3,000	3,000	3,000	3,000	3,000	3,000	18,000
Bill preparation/mailing	0	0	0	167	260	353	447	540	633	727	820	913	4,860
Errors/omissions Insurance	0	0	0	500	500	500	500	500	500	500	500	500	4,500
Subtotal	500	5,520	5,520	7,487	7,580	8,023	13,067	13,660	13,753	13,847	13,940	14,033	116,930
Total expenses	$77,456	$136,626	$227,737	$198,947	$215,717	$259,746	$288,235	$293,694	$328,623	$339,612	$367,501	$389,415	3,123,307

Year 2 Statement of Operations

	1992 Aug.	Sept.	Oct.	Nov.	Dec.	1993 Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Total Year
Net sales	$454,592	$505,096	$555,600	$606,103	$656,607	$707,110	$757,614	$808,118	$858,621	$909,125	$959,628	$1,010,132	$8,788,340
Operating expenses:													
Cost of communications	222,970	240,675	259,130	278,185	302,340	324,145	346,950	366,055	389,760	411,615	431,670	447,275	4,020,770
Administrative expenses	15,350	15,400	15,450	15,450	15,500	15,500	15,550	15,600	15,600	15,650	15,650	15,700	186,400
Billing and accounting expenses	15,547	15,640	15,733	15,827	15,920	16,013	16,107	16,200	16,293	16,387	16,480	16,573	192,720
Sales expenses	77,130	75,042	75,684	75,684	75,684	75,684	75,684	75,684	75,684	75,684	75,684	75,684	909,012
Japanese J/V expenses	14,463	12,713	13,325	13,938	14,550	15,163	15,775	16,388	17,000	17,613	18,225	18,838	187,988
Customer service	14,100	15,600	17,100	17,100	18,600	18,600	20,100	21,600	21,600	23,100	23,100	24,600	235,200
Lease expense	39,358	41,772	49,467	42,911	49,016	56,710	50,154	61,539	54,983	61,088	68,782	62,227	638,007
Technical expenses	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300	483,600
Total operating expenses	439,217	457,142	486,189	499,394	531,910	562,115	580,620	613,365	631,221	661,436	689,891	701,197	6,853,696
EBITDA	15,376	47,954	69,411	106,709	124,697	144,996	176,994	194,752	227,401	247,689	269,737	308,935	1,934,650
Depreciation/amortization	0	0	0	0	0	0	0	0	0	0	0	0	0
Corporate expenses	0	0	0	0	0	0	0	0	0	0	0	0	0
EBIT	15,376	47,954	69,411	106,709	124,697	144,996	176,994	194,752	227,401	247,689	269,737	308,935	1,934,650
Other income (expense):													
Cash interest income	0	0	0	0	0	0	0	0	0	0	0	0	0
Revolver interest (11%)	(671)	(311)	0	(1,034)	(349)	0	0	0	0	0	0	0	(2,365)
Extraordinary items	0	0	0	0	0	0	0	0	0	0	0	0	0
Other (expenses) income	0	0	0	0	0	0	0	0	0	0	0	0	0
Total other income (expense)	(671)	(311)	0	(1,034)	(349)	0	0	0	0	0	0	0	(2,365)
EBT	14,705	47,643	69,411	105,675	124,348	144,996	176,994	194,752	227,401	247,689	269,737	308,935	1,932,285
Income taxes	0	0	0	0	0	0	0	0	55,691	84,214	91,711	105,038	336,653
Net income	$14,705	$47,643	$69,411	$105,675	$124,348	$144,996	$176,994	$194,752	$171,710	$163,475	$178,027	$203,897	$1,595,632
Cumulative NOL's	(927,423)	(879,780)	(810,370)	(704,694)	(580,347)	(435,351)	(258,357)	(63,605)	0	0	0	0	0

EBITDA = earnings before interest, tax, depreciation, and amortization; EBIT = earnings before interest and tax; NOL = net operating loss.

Year 2 Balance Sheet

	1992 Aug.	Sept.	Oct.	Nov.	Dec.	1993 Jan.	Feb.	Mar.	Apr.	May	June	Jul.
Assets												
Current Assets:												
Cash	$10,000	$16,581	$10,000	$10,000	$70,240	$186,930	$336,604	$500,388	$645,667	$780,885	$928,880	$1,098,357
Invested cash	0	0	0	0	0	0	0	0	0	0	0	0
Accounts receivable	448,365	498,177	547,989	597,800	647,612	697,424	747,236	797,047	846,859	896,671	946,483	996,295
Total current assets	458,365	514,758	557,989	607,800	717,852	884,354	1,083,840	1,297,436	1,492,526	1,677,556	1,875,363	2,094,652
Long-term assets:												
Capital leases, costs, net	0	0	0	0	0	0	0	0	0	0	0	0
Net property, Plant, and equipment	0	0	0	0	0	0	0	0	0	0	0	0
Intangibles	0	0	0	0	0	0	0	0	0	0	0	0
Organizational expenses	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Total assets	$608,365	$664,758	$707,989	$757,800	$867,852	$1,034,354	$1,233,840	$1,447,436	$1,642,526	$1,827,556	$2,025,363	$2,244,652
Liabilities												
Accounts payable	$219,916	$237,378	$255,580	$274,374	$298,198	$319,705	$342,197	$361,041	$384,421	$405,976	$425,757	$441,148
Accrued expenses	131,905	157,160	0	0	0	0	0	0	0	0	0	0
Revolving facility	33,967	0	112,778	38,121	0	0	0	0	0	0	0	0
Other current/CMLTD	0	0	0	0	0	0	0	0	0	0	0	0
Total current liabilities	385,788	394,538	368,358	312,495	298,198	319,705	342,197	361,041	384,421	405,976	425,757	441,148
Total liabilities	$385,788	$394,538	$368,358	$312,495	$298,198	$319,705	$342,197	$361,041	$384,421	$405,976	$425,757	$441,148
Shareholders' equity												
Founders' invested capital	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Additional paid-in capital	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Retained earnings	(927,423)	(879,780)	(810,370)	(704,694)	(580,347)	(435,351)	(258,357)	(63,605)	108,105	271,580	449,606	653,504
Total shareholders' equity	222,577	270,220	339,630	445,306	569,653	714,649	891,643	1,086,395	1,258,105	1,421,580	1,599,606	1,803,504
Total liabilities and shareholders' equity	$608,365	$664,758	$707,989	$757,800	$867,852	$1,034,354	$1,233,840	$1,447,436	$1,642,526	$1,827,556	$2,025,363	$2,244,652

Year 2 Statement of Cash Flow

	1992					1993							
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Total Year
Net income	$ 14,705	$ 47,643	$ 69,411	$105,675	$124,348	$144,996	$176,994	$194,752	$171,710	$163,475	$178,027	$ 203,897	$1,595,632
Depreciation/amortization	0	0	0	0	0	0	0	0	0	0	0	0	0
Other adjustments	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross cash flow	14,705	47,643	69,411	105,675	124,348	144,996	176,994	194,752	171,710	163,475	178,027	203,897	1,595,632
Changes in working capital:													
Accounts receivable	(23,057)	(49,812)	(49,812)	(49,812)	(49,812)	(49,812)	(49,812)	(49,812)	(49,812)	(49,812)	(49,812)	(49,812)	(570,987)
Accounts payable	24,810	17,462	18,202	18,794	23,824	21,506	22,493	18,843	23,380	21,556	19,780	15,391	246,043
Accrued commissions	22,730	25,255	(157,160)	0	0	0	0	0	0	0	0	0	(109,176)
Other current liabs	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash flow from operations	39,188	40,548	(119,359)	74,657	98,360	116,690	149,675	163,784	145,279	135,218	147,995	169,477	1,161,512
Capital expenditures	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating cash flow	39,188	40,548	(119,359)	74,657	98,360	116,690	149,675	163,784	145,279	135,218	147,995	169,477	1,161,512
Changes in non-operating items													
Change in capital stock	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash available	$ 39,188	$ 40,548	($ 119,359)	$ 74,657	$ 98,360	$116,690	$149,675	$163,784	$145,279	$135,218	$147,995	$ 169,477	$1,161,512
Cumulative cash	(23,967)	16,581	(102,778)	(28,121)	70,240	186,930	336,604	500,388	645,667	780,885	928,880	1,098,357	
Maintenance cash level	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	

Year 2 Assumptions and Ratios

	1992					1993						
	Aug.	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*Jul.*
Income statement:												
Net monthly sales growth	5%	11%	10%	9%	8%	8%	7%	7%	6%	6%	6%	5%
Current gross margin	51%	52%	53%	54%	54%	54%	54%	55%	55%	55%	55%	56%
Current EBITDA margin	3%	9%	12%	18%	19%	21%	23%	24%	26%	27%	28%	31%
Communication as percentage of sales	49%	48%	47%	46%	46%	46%	46%	45%	45%	45%	45%	44%
Administrative as percentage of sales	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%	2%	2%
Sales expense as percentage of sales	17%	15%	14%	12%	12%	11%	10%	9%	9%	8%	8%	7%
Customer service as percentage of sales	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%
Leases as percentage of sales	9%	8%	9%	7%	7%	8%	7%	8%	6%	7%	7%	6%
Technical costs as percentage of sales	9%	8%	7%	7%	6%	6%	5%	5%	5%	4%	4%	4%
Balance sheet:												
A/R days	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
A/P days	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Revolver as percentage receivable base	7.58%	0.00%	20.58%	6.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Year 2 Revenue Breakdown

	1992					1993							
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Total Year
United States:													
Avg price/minute	$0.69												
Monthly Growth Rate	350 Minutes/rep												
Free minutes/day	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Net new minutes/day	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	
Total paid minutes/day	30,200	33,000	35,800	38,600	41,400	44,200	47,000	49,800	52,600	55,400	58,200	61,000	
Total minutes/month (20 days)	604,000	660,000	716,000	772,000	828,000	884,000	940,000	996,000	1,052,000	1,108,000	1,164,000	1,220,000	10,944,000
Monthly gross revenue	416,760	455,400	494,040	532,680	571,320	609,960	648,600	687,240	725,880	764,520	803,160	841,800	7,551,360
Uncollectables (1%)	4,168	4,554	4,940	5,327	5,713	6,100	6,486	6,872	7,259	7,645	8,032	8,418	75,514
Net monthly US revenue	$412,592	$450,846	$489,100	$527,353	$565,607	$603,860	$642,114	$680,368	$718,621	$756,875	$795,128	$833,382	7,475,846
Japan joint venture:													
Avg price/minute	$0.35												
	35,000												
Total minutes/month	120,000	155,000	190,000	225,000	260,000	295,000	330,000	365,000	400,000	435,000	470,000	505,000	3,750,000
Net Japanese Revenue	$42,000	$54,250	$66,500	$78,750	$91,000	$103,250	$115,500	$127,750	$140,000	$152,250	$164,500	$176,750	$1,312,500
Total US/Japan revenues	$454,592	$505,096	$555,600	$606,103	$656,607	$707,110	$757,614	$808,118	$858,621	$909,125	$959,628	$1,010,132	$8,788,346

Year 2 Expense Breakdown

	1992 Aug.	Sept.	Oct.	Nov.	Dec.	1993 Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Total Year
Technical development:													
Dr. Tom Sosnowski	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$84,000
Tom Flaherty (Oracle)	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	57,600
Steve Orr (UNIX)	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	90,000
Michael Landino (Oracle)	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	48,000
Contract programmers	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	24,000
Tokyo engineer	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	18,000
Equipment housing expenses	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500	138,000
Installation expenses	0	0	0	0	0	0	0	0	0	0	0	0	0
Other expenses	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	24,000
Subtotal	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300	40,300	483,600
Sales expenses:													
Doug Ranalli	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	84,000
Steve Lanzilla-VP Sales	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000
LA sales reps (2)	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	72,000
San Francisco reps (2)	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	72,000
NYC sales reps (2)	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	72,000
National accounts sales rep	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	36,000
Sales commissions (5%)	20,630	22,542	23,184	23,184	23,184	23,184	23,184	23,184	23,184	23,184	23,184	23,184	275,012
Sales office space	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	54,000
Sales expenses	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	168,000
Marketing/office supplies	5,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	16,000
Headhunter fees	0	0	0	0	0	0	0	0	0	0	0	0	0
Total sales personnel	8	8	8	8	8	8	8	8	8	8	8	8	
Subtotal	77,130	75,042	75,684	75,684	75,684	75,684	75,684	75,684	75,684	75,684	75,684	75,684	909,012
Japanese joint venture:													
Doug Fine	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000
Chuo Coopers & Lybrand Performance bonuses	4,463	2,713	3,325	3,938	4,550	5,163	5,775	6,388	7,000	7,613	8,225	8,838	67,988
Expenses	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000
Subtotal	14,463	12,713	13,325	13,938	14,550	15,163	15,775	16,388	17,000	17,613	18,225	18,838	187,988
Network assets:													
Network Hardware Lease	19,680	21,120	22,560	22,560	24,000	25,440	25,440	26,880	26,880	28,320	29,760	29,760	302,400
Japanese J/V Hardware	2,880	2,880	4,320	4,320	4,320	5,760	5,760	7,200	7,200	7,200	8,640	8,640	69,120
Auto-dialer Lease	9,067	9,813	10,560	11,307	12,053	12,800	13,547	14,293	15,040	15,787	16,533	17,280	158,080
Up-front Lease Deposits	2,187	2,187	3,627	747	2,187	3,627	747	3,627	747	2,187	3,627	747	26,240
Extended Service Contract	2,471	2,642	2,925	2,983	3,154	3,438	3,496	3,779	3,838	4,008	4,292	4,350	41,375
Import Duties	2,250	2,250	4,500	0	2,250	4,500	0	4,500	0	2,250	4,500	0	27,000
Equipment Insurance	824	881	975	994	1,051	1,146	1,165	1,260	1,279	1,336	1,431	1,450	13,792
Operating leases	39,358	41,772	49,467	42,911	49,016	56,710	50,154	61,539	54,983	61,088	68,782	62,227	638,007
Network asset value	988,333	1,056,667	1,170,000	1,193,333	1,261,667	1,375,000	1,398,333	1,511,667	1,535,000	1,603,333	1,716,667	1,740,000	

(Continued)

Year 2 Expense Breakdown (*concluded*)

	1992					*1993*							
	Aug.	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*Jul.*	*Total Year*
Communications expenses:													
Network demonstrations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Avg variable cost/min	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	
Monthly U.S. variable costs	81,120	88,400	95,680	102,960	110,240	117,520	124,800	132,080	139,360	146,640	153,920	161,200	1,453,920
Monthly Japanese JV costs	16,200	20,925	25,650	30,375	35,100	39,825	44,550	49,275	54,000	58,725	63,450	68,175	506,250
Number of 64kbps channels	20	22	24	25	27	29	31	32	34	36	38	39	
Fractional T1	103,550	109,250	114,000	121,050	133,200	141,300	152,100	157,500	169,200	178,200	185,400	189,000	1,753,750
Switched digital service	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	115,200
Local loop service	11,500	11,500	13,200	13,200	13,200	14,900	14,900	16,600	16,600	17,450	18,300	18,300	179,650
Installation expenses	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	12,000
Subtotal	222,970	240,675	259,130	278,185	302,340	324,145	346,950	366,055	389,760	411,615	431,670	447,275	4,020,770
Customer service:													
Carla Ferrara (CSR)	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	26,400
Add'l full-time reps	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	26,400
Peak period service reps	4,000	5,000	6,000	6,000	7,000	7,000	8,000	9,000	9,000	10,000	10,000	11,000	92,000
Evening service rep	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	26,400
Expenses	3,500	4,000	4,500	4,500	5,000	5,000	5,500	6,000	6,000	6,500	6,500	7,000	64,000
Number of service personnel	7	8	9	9	10	10	11	12	12	13	13	14	
Subtotal	14,100	15,600	17,100	17,100	18,600	18,600	20,100	21,600	21,600	23,100	23,100	24,600	235,200
Administrative expenses:													
Headquarters office space	2,850	2,900	2,950	2,950	3,000	3,000	3,050	3,100	3,100	3,150	3,150	3,200	36,400
Furniture lease	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	12,000
Legal and accounting consultants	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	24,000
Financial consulting	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	84,000
Office supplies, etc.	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	12,000
Other expenses	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	18,000
Subtotal	15,350	15,400	15,450	15,450	15,500	15,500	15,550	15,600	15,600	15,650	15,650	15,700	186,400
Billing and accounting:													
Payroll expenses	7,790	7,790	7,790	7,790	7,790	7,790	7,790	7,790	7,790	7,790	7,790	7,790	93,480
Bookkeeper	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	36,000
Credit/collections person	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	36,000
Bill preparation/mailing	1,007	1,100	1,193	1,287	1,380	1,473	1,567	1,660	1,753	1,847	1,940	2,033	18,240
Errors/omissions insurance	750	750	750	750	750	750	750	750	750	750	750	750	9,000
Subtotal	15,547	15,640	15,733	15,827	15,920	16,013	16,107	16,200	16,293	16,387	16,480	16,573	192,720
Total expenses	$439,217	$457,142	$486,189	$499,394	$531,910	$562,115	$580,620	$613,365	$631,221	$661,436	$689,891	$701,197	6,853,696

REVENUE AND EXPENSE ASSUMPTIONS

Detailed Revenues

United States:

- Average price/minute:
  - *Year 1*: The average price assumes that new account traffic will be split evenly between large and small accounts. Accounts billing over $500/month will be billed at $.69/minute. Small accounts will be billed at $.79/minute.
  - *Year 2 and Year 3*: Average price is projected to drop to $.69/minute in Year 2 and $.62/minute in Year 3 as the percentage of large customers increases and as competition enters the market.
- Monthly growth rate: Each sales rep is expected to generate 350 new minutes/day of traffic each month. A detailed explanation of this item is provided in the business plan under "Sales Expectations."
- Free minutes/day: Sales reps are expected to give away 100 free minutes of service to three times as many accounts as they are expected to close.
- Net new minutes/day: Multiplication of the number of sales reps times the monthly growth rate figure addressed above.
- Uncollectible accounts: One percent uncollectibles based on statistics generated by AT&T.

Japan joint venture:

- Average price/minute: Average price per minute charged to the Japanese partner for use of the network is a combination of $.30/minute to cover transmission costs and $.05/minute to cover the equipment dedicated to the Japanese joint venture.
- Total minutes/month: Aggregate number of minutes transmitted by the Japanese partner each month. Traffic growth rate is estimated to be 60% of the rate achieved by the US sales force. The 60% number was selected with the intention of being conservative. Initial sales from Japan are not scheduled to begin until six months after a list of qualified joint venture partners has been developed. Initial sales volume from Japan will be bolstered by the actions of US sales reps introducing the return service to Japanese companies already using FAX International in the United States.

Detailed Expenses

Technical development:

- Personnel: All salary figures reflect actual agreements for full-time employment. All four full-time network development personnel are tied into three-year stock vesting programs. Dr. Sosnowski and Steve Orr have each accepted salary reductions equal to $6,000/month in return for their stock positions.
- Contract programmers: No additional consulting work is anticipated in Year 1. A small budget has been set aside for Years 2 and 3 to deal with intermittent needs.
- Tokyo engineer: Ministry of Post and Telecommunications (MPT) in Japan requires that FAX International employ a certified senior telecommunications engineer to be responsible for meeting all regulatory approvals.
- Equipment housing expenses: FAX International's network hardware will be housed at KDD's main international switching facility in Tokyo. All hardware and communications lines will be monitored and maintained on a 24-hour basis. Similar arrangements have been negotiated in the U.S. with Teleport Communications in Boston and New York, and M.F.S. in Los Angeles and San Francisco.
- Installation expenses: Budget for installation of all network hardware and communications lines in Tokyo and Boston. The majority of the cost will go towards custom installation work performed by KDD to provide security, 24-hour maintenance, earthquake protection, guaranteed back-up power supply, and so on.

Sales expenses:

- Sales office space: Field sales reps in Los Angeles, New York, and San Francisco will share an office in an executive office suite. The budget for each shared office has been set at $1,500/month. Offices will include furniture, limited secretarial support, answering service, voice mail, copy facilities, mail facilities, and so on.
- Sales expenses: Field sales reps will be responsible for covering all accounts within driving distance of their assigned metropolitan area. Expenses for each field sales rep are projected at $500/month to cover local travel expenses and local phone expenses. An additional $10,000/month has been allocated to cover travel expenses and long distance phone expense for Ranalli, Lanzilla, and the national accounts installation rep.

Japanese joint venture:

- Chuo Coopers & Lybrand: C&L has submitted a proposal for a $20,000 three-month project to identify and prequalify a list of joint venture candidates. No decision has been made but a budget has been set aside beginning in January 1992.

Network assets:

- Network hardware lease: All lease payments are based on three-year contracts at a monthly lease rate of 3.2% per month calculated on the purchase price of the assets. The lease rate assumption is based on the current rates being paid by FAX International.
- Japanese J/V hardware: Hardware purchased specifically to handle return traffic from Japan.
- Import duties: 10 percent import duty paid on all network hardware equipment purchased in the United States and shipped to Japan for use in the Tokyo network node.

Communications expenses:

- Network demonstrations: FAX International sales reps will be able to provide full-function network demonstrations to potential customers before the system is actually installed between the United States and Tokyo. Expenses cover the cost of placing international telephone calls to Tokyo to deliver the demonstration documents.

(Continued)

REVENUE AND EXPENSE ASSUMPTIONS (*concluded*)

Average variable cost per minute: Combination of \$.15/minute to collect a document in the United States via an 800 number and \$.03/minute to deliver a document via a local call in Tokyo. Average variable cost drops to \$.13 in March once the US network is expanded to include remote collection nodes in Los Angeles, San Francisco, and New York City. Documents received at a remote collection node cost only \$.05/minute to collect. Business plan assumes half of all documents will always be received via an 800 number.

Monthly Japanese JV costs: Documents received from the Japanese partner will be delivered in the United States via a long-distance call from Boston to the destination fax machine. Average cost per minute will be a maximum of \$.135.

Number of 64kbps channels: Calculation of the total bandwidth required on the international private line between Boston and Tokyo.

Fractional T1: Monthly fee for an international private line with the number of active channels shown in the row above.

Local loop service: Cost of fiber optic communications access from the FAX International network nodes in the United States and Tokyo into the AT&T and KDD facilities.

Installation expenses: Fees paid for adding capacity to the communications facilities outlined above.

Customer service: FAX International will employ both full-time customer service reps (CSR) and part-time reps to cover peak demand periods. CSR staffing levels are based on the assumption that 5% of all documents handled by the network will require special handling by a CSR. Each CSR is expected to be able to handle a maximum of 20 problem documents per hour. Note: Research conducted by Cable & Wireless shows that 98% of all fax documents get delivered within three attempts.

Administrative expenses:

Legal and accounting consulting: \$30,000 charge in the first month of operations is an estimate of the cost to negotiate and close a deal for the second round of financing. Monthly budget of \$2,000 is intended to cover all ongoing legal and accounting consulting fees.

PREPARING A BUSINESS PLAN

A Complete Business Plan

It may seem to an entrepreneur who has completed the Opportunity Screening Guide in Chapter 4 and who has spent hours of thinking and planning informally that all that now needs to be done is to jot down a few things. *However, there is a great difference between screening an opportunity and developing a business plan.*

There are two important differences in the way these issues need to be addressed. First, a business plan can have two uses: (1) inducing someone to part with maybe \$500,000 to \$2 million, or even more, and (2) guiding the policies and actions of the firm over a number of years. Therefore, strategies and statements made need to be well thought out, unambiguous, and capable of being supported.

Another difference is that more detail is needed. (The exception to this is the "Dehydrated Business Plan" discussed later in this chapter.) This means that the team needs to spend more time in gathering detailed data, in interpreting it, and in presenting it clearly. For example, for the purpose of screening an opportunity, it may be all right to note (if one cannot do any better) that the target market for a product is in the \$30–\$60 million range and the market is growing over 10 percent per year. For purposes of planning to launch an actual new enterprise, determine strategy, and so forth, this level of detail would not get by. The size range would need to be narrowed considerably; if it were not narrowed, those reading or using the plan would have little confidence in this critical number. And saying the target market is growing at over 10 percent is too vague. Does that mean the market grew at the stated rate between last year and the year before, or does it mean that the market grew on average by this amount over the past three years? Also, a statement phrased in terms of "over 10 percent" smacks of imprecision. The actual growth rate needs to be known and needs to be stated. Whether the rate will or will not remain the same, and why, needs to be explained also.

Preparing an effective business plan for a start-up can easily take 200 to 300 hours. Squeezing that amount of time into evenings and weekends can make the process stretch over 3 to 12 months.

4

Positioning: Creating Value

If a man . . . make a better mousetrap than his neighbor, tho' he build his house in the woods, the world will make a beaten path to his door.

—Ralph Waldo Emerson, *Lectures*

The last chapter explained that commitment-intensive or strategic choices are choices among significantly different bundles of durable, specialized, untraded factors, and that they resist yet nevertheless require in-depth analysis. It is useful to begin such analysis by thinking through the *position* (i.e., strengths and weaknesses) each strategic option implies with respect to product market competitors. Emerson explained why more than a century ago. Suppose you are deciding whether to try to develop a new type of mousetrap. The first thing to look at is how the innovation will stack up against competing mousetraps. If the innovation is no better than them, it is unlikely to generate much value. If it does offer some sort of advantage, however, it is worth further thought.

This chapter describes the framework that has been developed in the last few decades for analyzing the positions implied by strategic options. In order to avoid having to tackle the complexities of commitment all at once, it invokes two assumptions that conveniently restrict, in the customary way, the scope of positioning analysis. The first simplifying assumption is that the value to the organization's owners of the pursuit of one commitment option as opposed to another is independent of the differential reactions of competitors, buyers, suppliers, employees and other interested parties. The second one is that the organization will persist with the course of action favored by the option it initially elects to pursue. Because of these assumptions, positioning analysis is substantively incomplete.

Fortunately, the restrictive assumptions implicit in positioning analysis, of zero differential reactions and zero revisions, can be relaxed. Chapter 5, on *sustainability* analysis, dispenses with the assumption of zero differential reactions and thereby adds a game-theoretic dimension to the decision-theoretic outlook characteristic of much of the work on positioning.[1] Chapter 6, on *flexibility* analysis, dispenses with the second restrictive assumption, of zero revisions. This generalization requires a full-blooded treatment of uncertainty and its interaction with irreversibility, informed by recent insights from informational economics.

Taken together, chapters 4 through 6 outline a coherent way of comparing the aggregate values of strategic options by overlaying considerations of sustainability and flexibility on option-by-option estimates of positioning value. This chapter is simply meant to help us get to a first-cut evaluation of such options, under restrictive yet convenient assumptions that can later be relaxed. Its conceptual fare is sandwiched between two examples. The first example, which follows immediately, should hint at the power of positioning analysis, in spite of its restrictive assumptions, to sharpen strategic choice. The second example, toward the end of the chapter, is meant as a review.

RECONSIDER THE LAUNCH OF THE LOCKHEED TRISTAR.

The best way to illustrate what positioning analysis can do for you is to apply it to a strategic choice of a sort that is widely supposed to defy careful analysis: the launch of a large new passenger jet. Newhouse (1982, p. 3) has nicely evoked the atmosphere of such choices:

> In deciding to build a new airliner, a manufacturer is literally betting the company, because the size of the investment may exceed the company's entire net worth. The remarkable scale on which they operate induces a curiously understated, rather casual style among senior executives in this industry. Betting the company, for example, is being "sporty."

Lockheed was being rather sporty, in spring 1968, when it bet nearly three times its net worth on a three-engine wide-body jet later named the TriStar. Since the failure of its last big commerical launch, the Electra, in 1955, Lockheed had become almost entirely dependent on military sales, a condition that its top management wanted to rectify. In late 1966, when it lost the government-run competition to build the U.S. supersonic transport (SST), its chairman, Daniel Haughton, reacted by putting the SST designers to work on the wide-body.

Wide-bodies, with two passenger aisles rather than one, were made possible by the "high-bypass (power)" jet engines developed for the C-5A military transport, a project on which Lockheed was the prime airframe contractor. Boeing's 747, discussed in chapter 2, represented the first attempt to commercialize high-bypass jet engines: it used four of them. But the 747 seemed, like the 707 which had pioneered narrow-body jet technology ten years earlier, to leave a hole in the market for smaller planes powered by the same engine. There were two smaller alternatives to the four-engine 747: a three-engine design optimized for about three-quarters of its capacity, and a two-engine design optimized for about one-half. Lockheed picked the trijet rather than the twin-jet, and was quickly followed into the same market segment by McDonnell Douglas' DC-10.

By spring 1968, the pattern of early orders plus the precommitment of McDonnell Douglas to the market for large commercial aircraft had made it clear that if Lockheed pushed ahead with the TriStar, it would have to split the market with the DC-10. At this juncture, Lockheed had committed only 1% to 2% of the billion-plus dollars thought to be required for the development of the TriStar. It went ahead anyway, without ever really questioning the commercial viability of a position as a trijet duopolist rather than monopolist. By its own account, it eventually lost about $2.5 billion on the TriStar program—an average of $10 million on each plane sold until the program was terminated in 1983. More careful analysis of the costs and benefits of achieving a duopoly position in trijets might have averted these losses by suggesting that the TriStar could not possibly pay for itself off a split market.

To see how more careful analysis might have helped Lockheed, it is necessary to review the analysis that it actually undertook. According to the information I have been able to piece together, Lockheed anticipated that the total nonrecurring outlays on developing and tooling up for the TriStar would be on the order of $1 billion, and that recurring production costs would be subject to a 77% learning curve, approximating $15.5 million for the 150th TriStar and $12 million for the 300th. Based on these estimates and a price forecast of $15.5 million per plane, the (undiscounted) cumulated cash flow from the TriStar program would turn positive in the vicinity of 300 planes—a sales target Lockheed was confident of surpassing when it made its announcement.

When McDonnell Douglas announced the directly competitive DC-10 three months later, Lockheed's top managers asked themselves whether they could still sell 300 TriStars—the number had been detached from the context in which it had been derived—and came up affirmative, largely because of a sense that their plane was technically superior. Lockheed went ahead with the TriStar and was saved from bankruptcy only by the grace of the U.S. government. Where, in analytical terms, did it go astray?

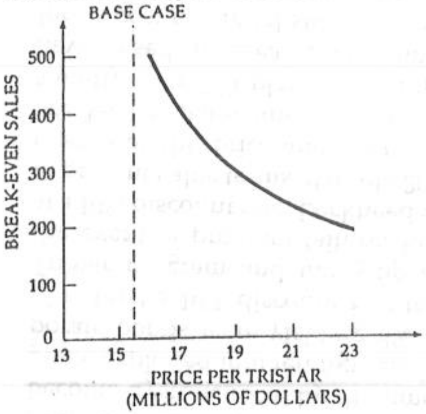
Most obviously, Lockheed's analysis failed to account for its cost of capital and thereby seriously underestimated the TriStar's true break-even point. The assumption of a zero cost of capital in break-even calculations, while customary in the aircraft industry, had become dysfunctional by the time the development costs for a new plane exploded into ten figures. In 1968, high-grade, long-term corporate bonds were yielding 8% or 9%, suggesting the application of at least a 10% discount rate to the cash flows expected from the TriStar program and implying a serious threat of bankruptcy in the event of program failure. Reinhardt (1973) has calculated that at a 10% discount rate, Lockheed would have lost nearly $250 million, in present value terms, if it sold 300 planes (the undiscounted "break-even") at the price and pace it had originally forecast. The true break-even point under those assumptions appears to have been slightly over 500 planes. Raising the discount rate to 15% would have raised the break-even point to over 1,000 planes. Accounting for its cost of capital should therefore have suggested to Lockheed that even if its (optimistic) forecasts for trijet demand were fulfilled, the TriStar would have to capture nearly two-thirds of that market, rather than a bit more than a third, to pay for itself.

Could Lockheed's trijet decisively beat McDonnell Douglas'? Lockheed seems to have assumed that the superior design of the TriStar (and its Rolls-Royce engines) would assure its competitive success. It seems, for that reason, to have taken a very narrow view of benefits to buyers. The TriStar *did* have some appealing characteristics (in such respects as hydraulics, cockpit layout and the mount for the tail-engine) relative to the DC-10, but it had become clear by spring 1968 that the airlines would not pay more for one plane than for the other. Any residual design-related disadvantage for the DC-10 was more than offset by its various advantages. The reputation of McDonnell Douglas enabled the DC-10 to secure the two largest domestic carriers, United and American, as its launch customers: they had had doubts about Lockheed since the Electra debacle and simply didn't trust its British engine supplier, Rolls-Royce (which had, up to that point, been shut out of the U.S. market). They regarded McDonnell Douglas, in contrast, as the one supplier that might give Boeing a run for its money and therefore, other things being reasonably equal, the one to favor. Without United and American, there would have been no DC-10; with their orders in hand, McDonnell Douglas arguably entered the next phase of the competition stronger, not weaker, than Lockheed.

The DC-10 also managed to achieve a timing advantage over the TriStar, for reasons including its more evolutionary design and McDonnell Douglas' prior experience with large passenger jets. The potential for such an advantage was evident in the late 1960s, even before Lockheed ran into unanticipated problems with its engine supplier and its military contracts. While Lockheed was planning to work on just one version of the TriStar in the first few years of its trijet program, McDonnell Douglas was planning to develop, over roughly the same time frame, two versions of the DC-10: one that would compete head-on with the TriStar, and an extended-range version that would compete, somewhat less directly, with the 747. If both development efforts achieved technical success—and they did—the DC-10 would have a head start at winning the rest of the race. For these reasons, it wasn't at all clear, in spring 1968, that the TriStar's superior design would allow it to outsell the DC-10, i.e., (perhaps) achieve a positive net present value.

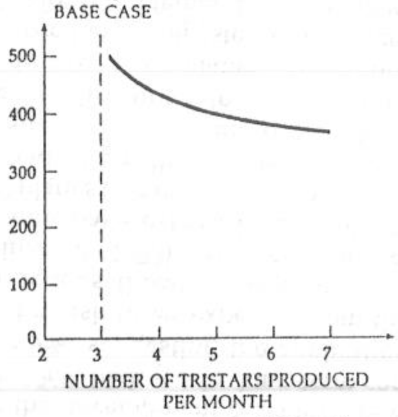
By implication, the sales volume required to make the TriStar pay for itself seemed, on the basis of Lockheed's original projections about unit margins (discounted at 10%), unlikely to be achieved. To make matters worse, the original margin projections should themselves have been revised downward to reflect competition from

Exhibit 4.1a Impact of Price*



*Assumes a monthly production rate of 3 TriStars.

Exhibit 4.1b Impact of Production Rates*



*Assumes a price per TriStar of $15.5 million.

SOURCE: Reinhardt (1973), pp. 832-833.

the DC-10. Competition had already forced Lockheed to cut the price of the TriStar from $15.5 million to $14.2 million. By limiting production rates and making them fluctuate, it would also raise the average level of costs. Reinhardt's (1973) analysis demonstrates that each of these margin-reducing effects could have been forecast to have a very adverse effect on the economics of the TriStar program (see Exhibits 4.1a and 4.1b). It leads him (p. 834, emphasis in original) to the conclusion that *"One may doubt that there existed in 1968 a feasible price-sales combination for the Tristar at which the program could have been expected to generate a positive net present value."*

Thus, while one can understand the desire of Lockheed's top management to reenter the commercial market, it was a poor idea to do so with a plane that could have been foreseen to lose the company a lot of money at a time when it was already overstretched. Further, even if Lockheed *was* determined to reenter the commercial market in time for the next reequipment cycle, the launch of the DC-10 should, at the very least, have forced it to reassess whether all of the twin-jet market wouldn't be better than half or less of the trijet market. Note that the European Airbus consortium later seized on the twin-jet concept and did rather well with it.

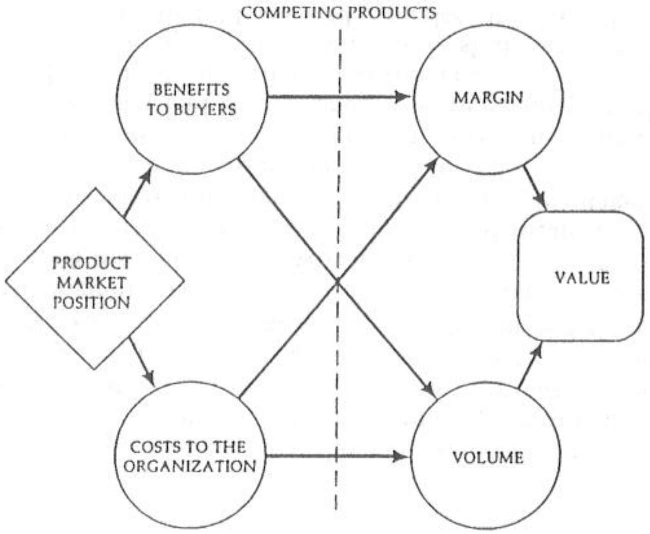
The Lockheed story illustrates the potential of positioning analysis. It also hints at some general guidelines for evaluating the competitive

positions implied by different strategic options. These are systematized in the next section.

POSITIONING ANALYSIS COMPARES THE COSTS INCURRED AND THE BENEFITS DELIVERED BY STRATEGIC OPTIONS.

The modern framework for the positioning analysis of strategic choices is outlined in Exhibit 4.2. The framework's logic is straightforward. It starts with the observation that strategic choices, while hitherto viewed (in this book) from the perspective of factor deployments, have predictable implications for the level of costs incurred by the organization and the level of benefits delivered by its product(s) or service(s) to buyers. Buyers' trade-offs among competing products determine the margin-volume combinations available to the organization from each strategic option. The *positioning value* of an option is defined in terms of the most advantageous margin-volume combination it is expected to permit, i.e., in terms of the margin per unit times the number of units sold. Sometimes, as in the case of the TriStar, it is essential to trace out the margin-volume combinations over time instead of relying on timeless snapshots

Exhibit 4.2 The Framework for Positioning Analysis



of them. Each of these elements of the received framework for positioning analysis deserves to be discussed in more detail.

The Product Market Perspective

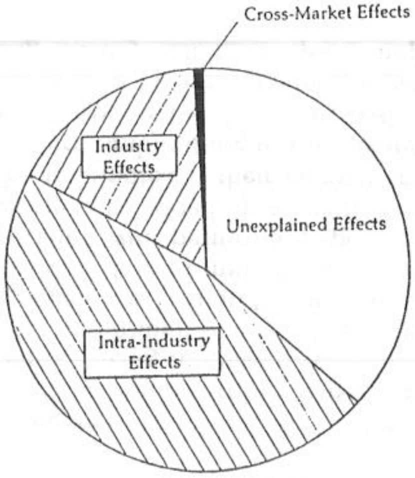
The epigraph from Emerson hinted at the advantages of tracing the implications of commitment-intensive or strategic choices all the way through to the level at which organizations finally market their products (or services). Analysis at this level, henceforth the *product market* level, should be thought of as spanning all the functions that the organization performs *en route* to earning its daily bread. For instance, analysis at the product market level of whether to try to build a better mousetrap (or the TriStar) would pull together the implications for R&D, production and marketing instead of focusing on just one of those functions.

Adoption of the product market perspective is more than just a matter of taste or tradition. Recall, from chapter 3, that much of the difficulty of analyzing strategic choices stems from the extreme imperfections of markets for durable, specialized, generally untraded factors. These imperfections complicate direct assessments of the values of such factors. It is useful, for that reason, to exploit the long-run duality between the factor market and product market perspectives on the organization by evaluating the distinct bundles of factors implied by different options from the product market side. Lockheed, for instance, did not analyze the expenditure of a billion-plus dollars on developing the TriStar by trying to figure out what the factors thereby created might be sold for. Instead, it tried to figure out whether it could sell enough TriStars at a price that would allow it to cover the program's total costs.

The product market perspective obviously implies cross-functional analysis of strategic choices. Cross-functional analysis is essential because of evidence that product market competitors may be able to do equally well (or poorly) in different ways. For instance, Hunt's (1972) seminal study of major home appliances (refrigerators, stoves, dishwashers, washers and dryers) in the United States uncovered viable narrow- as well as broad-line positions in that industry: Maytag had historically outperformed the industry averages with the former, and General Electric with the latter. Since it does seem to be possible for product market competitors to succeed with quite different combinations of functional strengths and weaknesses, the implications of strategic choice for competitive position must be understood at a cross-functional level. Lockheed apparently forgot this point: it apparently overemphasized the TriStar's design and underemphasized considerations related to manufacturing, marketing and finance.

The product market perspective also implies that even when a strategic choice impinges on more than one product market served by the organization, its effects should be spelled out at the level of individual product markets.[2] This implication is underpinned by evidence—see Exhibit 4.3, for instance—that cross-market influences on organizational performance are, on average, an order or two of magnitude weaker than influences attributable to competitive positions in individual markets (which include both intra-industry effects and industry-level effects). To emphasize cross-market considerations at the expense of careful market-level analysis anyway is to court disaster. In launching and persisting with the TriStar, for instance, Lockheed gave too much weight to its desire to rebalance its portfolio of businesses and too little to careful analysis of the trijet market. In deference to such disasters, modern positioning theory stipulates that strategic choices should *always* be analyzed

Exhibit 4.3 Sources of Variance in Business Unit Profitability



SOURCE: Rumelt (1989).

in terms of their implications for competitive positions in individual product markets.

Agreement on a product market focus does not automatically delimit product market boundaries. It is widely accepted, however, that such boundaries should be drawn broadly enough to account for substitute products that fulfill the same buyer needs.[3] In addition to comparing a new mousetrap with competing ones, for instance, one must also reckon with other devices that help control mice (e.g., the ultrasonic ones that are supposed to repel rather than eliminate the problem). This emphasis on taking substitutes into account is part of a broader purpose of the product market perspective: of forcing the organization to keep its eyes on its environment instead of on its navel.

At a procedural level, product market definition must be responsive to the organization's internal structure as well as its external environment. Internal structure, particularly the way the organization is partitioned into subunits, influences the form in which the information required for strategic analysis is most easily obtained. On occasion (e.g., if internal structure is in shambles), considerations of accuracy may outweigh considerations of ease: an extensive clean-up of the available information may then be in order. Given the expense (and delay) of setting up new channels of information for each analysis, however, extensive clean-up efforts should be the exception rather than the rule.[4]

Costs to the Organization

Modern positioning theory models the organization as mediating between suppliers and buyers. As a result, analysis of the product market implications of strategic choices must proceed on two fronts: on the supply side, the strategist must understand the levels of costs that will be incurred by the organization under different options, and on the demand side, the levels of benefits it will deliver to buyers as a result. Cost analysis is the topic of this subsection, and analysis of benefits to buyers the topic of the next one.

Comprehensiveness is the first and most obvious guideline for cost analysis. Organizations incur costs in adding or shedding factors as well as in deploying them (i.e., in performing specific functions with them). Cost behavior cannot, for that reason, be understood in terms of a single function, such as production. Instead, it must be understood broadly, across factors as well as functions.

Second, it is usually advantageous to unbundle aggregate costs into component categories. Lockheed, for instance, should have unbundled nonrecurring and recurring costs instead of mushing them together by emphasizing cumulated cash flow. There are several general reasons, in addition to what happened to Lockheed, for unbundling aggregate costs. First, the one-time costs associated with adding or shedding factors must be treated differently from the flow costs associated with performing specific functions if the two cost categories are to be added up sensibly. Second, even flow costs deserve to be unbundled if their components behave sufficiently differently. Third, unbundling forces advance consideration of how the functions associated with specific cost components will be fine-tuned to the stock of factors implied by a particular strategic option. Unbundling thereby facilitates option implementation as well as evaluation.

The TriStar case also hints at a general procedure for unbundled cost analysis: split aggregate costs into a limited number of categories expected to behave in interestingly different ways and specify a limited number of *drivers* that will affect the level of costs incurred in each category. Reconsider Reinhardt's (1973) positioning analysis of the TriStar. He first split its aggregate costs into nonrecurring and recurring categories. He then specified the cost drivers relevant to each category: the total number of TriStars sold would be the chief driver of the average level of nonrecurring costs (since total nonrecurring costs were largely fixed), and the recurring costs per unit would be driven, primarily, by the rate of output and the number of TriStars already produced. But this is all very case-specific. How, in general, should cost categories and their drivers be identified?

Common sense, backed up by systematic empirical research (Collis 1986), suggests several rules for splitting up aggregate costs. First, cost categories deserve to be broken out (instead of being lumped together) only if the factor differentials among the options being considered are likely to influence them in different ways. Second, discrete cost categories must be technically separable: there would be no sense in carrying two separate cost categories through the entire analysis if the choice about how to perform the functions subsumed by one totally determined how the functions subsumed by the other were to be performed as well. Third, individual cost categories should be large enough to exert significant influences on overall business performance. Fourth, organizational structure must also be attended to because, as discussed in the previous subsection, it determines the form in which the information required for strategic analysis is most easily obtained: data are frequently prepackaged in ways that favor a particular way of splitting up costs. Finally, generic templates such as McKinsey's business system (Bales et al. 1980) or Porter's (1985) value chain may sometimes be useful in deciding how to unbundle costs in specific instances. Note that such templates typically involve fewer than ten discrete cost categories.

If cost categories are one pillar of strategic cost analysis, cost drivers are the other. Bain (1956) initiated the systematic discussion of cost drivers by distinguishing between size-related and "absolute" (size-unrelated) ones. Porter (1985, chap. 3) has elaborated and extended Bain's classification into a menu of ten generic cost drivers: three that are broadly related to size or to the fixed costs that make size matter (economies and diseconomies of scale, learning and spillovers, and the pattern of capacity utilization), three that address various types of linkages (across the functions performed by an individual organizational subunit and across vertically and horizontally related organizational subunits), and four that can only be classified as miscellaneous (timing, policy choices, location and institutional factors). Porter makes a convincing case that the behavior of each cost category should be understood in terms of a limited number of drivers off this menu, and that the numbers added up into aggregate costs should reflect such an understanding. To return to the TriStar, Reinhardt (1973) modeled recurring and nonrecurring costs as (different) functions of just two cost drivers: scale (the rate of output) and learning (output over time).

Common sense suggests several determinants of the number and nature of cost drivers selected per cost category. Other things being equal, categories that account for a thicker slice of costs deserve more attention, i.e., treatment in terms of more cost drivers. The analysis of any particular cost category should focus on the drivers that have the biggest impact on it. Additionally, the effects of a particular cost driver require modeling only if the options being analyzed afford significantly different degrees of leverage with respect to that driver.[5] Reinhardt's cost model supports my sense that analysis of an individual cost category rarely requires more than two or three cost drivers.

Benefits to Buyers

The costs to the organization of doing one thing as opposed to another are just part of positioning analysis: differences in the benefits delivered to buyers by different strategic options must also be taken into account. Benefits actually seem to pack more of a punch: differences in the levels of benefits delivered seem to account for more of the performance variation observed among product market competitors than do differences in the levels of costs that they incur.[6] The analysis of benefits to buyers is, as a result, important for all products except a few "pure" commodities.

Benefits tend, however, to be harder to unravel than costs, for several reasons. Picturing the organization as a bundle of factors, benefits tend to depend comparatively more heavily on intangible (i.e., physically immeasurable) factors than do costs. Picturing it in terms of the functions that it performs, cost analysis can be conducted on the basis of (relatively) objective technical relationships, but benefit analysis requires assumptions about subjective buyer preferences as well as objective information about products. Finally, individual cost categories, once analyzed, can simply be added up, whereas overall product benefits may have a more complicated (i.e., nonadditive) structure. Despite these difficulties, it *is* possible to lay down some general guidelines for the analysis of benefits to buyers.

Benefit analysis should be grounded in *characteristics*, the objective attributes of products that are relevant to choice by buyers. In the TriStar case, these included attributes such as seating capacity, range, fuel efficiency, noise levels and redundancy of key subsystems. Characteristics are meant to crystallize notions about buyers' wants. They may enter buyers' benefit functions either positively or negatively. They are appropriately measured in terms of gross rather than net (of price) benefits to buyers: price should be thought of not as a characteristic, but as the gross payoff per unit afforded by serving up a particular bundle of characteristics. To flag the relevant characteristics, one must understand how the buyer actually uses the product or service. This may, on occasion, involve fairly elaborate analysis of the functions the *buyer* performs (Porter 1985, chap. 3). The example toward the end of this chapter will reinforce this point.

A thorough understanding of the buyer's consumption process usually suggests an unmanageably long list of characteristics that might matter. One of the major challenges in benefit analysis is to pare this unwieldy long list down to a short list of characteristics whose effects can be understood in appropriate detail. Lancaster's (1971, chap. 9) analysis of buyer choice among competing products suggests several rules for doing so. First, if the total contribution of a group of competing products to a particular characteristic is small in relation to the contribution from products outside the group, that characteristic can be neglected in the analysis of the small group. Second, a characteristic that is invariant over the group of competing products is analytically irrelevant. (As a corollary, if two or more characteristics are possessed by all competing products in a fixed ratio, all but one of them can be treated as irrelevant.) Third, even if competitors within the group deliver different levels of a particular characteristic, such differentials should be ignored if they fail, because of either satiation or domination, to affect buyer choice. Fourth, of the characteristics that do affect buyer choice, it is useful to focus on the ones to which it is most sensitive. By thinking along such lines, Lockheed might have been able to avoid making too much of the TriStar's design-related refinements.

Since Lancaster defined characteristics objectively, his analysis of benefits must be supplemented with subjective considerations. Porter (1985, chap. 3) has suggested thinking about the subjective component of buyer choice in terms of *signals* of benefits. Signals of benefits are distinct from characteristics in that they influence buyers' perceptions of the organization's ability to satisfy their wants rather than the organization's actual ability to do so. Porter has compiled an interesting list of such signals: reputation or image, cumulative advertising, weight or outward appearance of the product, packaging and labels, appearance and size, time in business, installed base, customer list, market share, price (where price connotes quality), parent company identity (size, financial stability, etc.) and visibility to top management of the buying firm (1985, p. 144). Lockheed slighted signaling considerations in analyzing the TriStar. While it was right to assume that the TriStar's superior design would appeal to airlines' engineering staffs, it was wrong to gloss over the fact that first-buys would largely be determined by top managers more skeptical of Lockheed than of McDonnell Douglas—the fact that objective design-related characteristics would be just one of the inputs into the trijet buying process.

Note that the objective (characteristic-related) and subjective (signal-related) approaches to benefit analysis are quite compatible with each other. The former implicitly assumes that buyers maximize net benefits to themselves, and the latter lets one probe the reasons they may not actually do so. By implication, the objective part of benefit analysis emphasizes the technology of the consumption process and the subjective part the structure of the buying process.

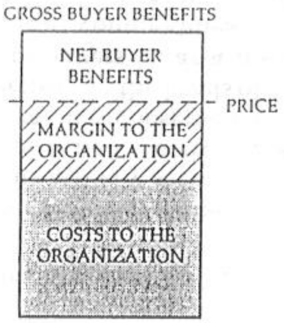
While the appropriate allocation of attention between the two may vary from situation to situation, it is essential to keep both in view.

Comparison with Competitors

The preceding discussion might have seemed to be headed toward the conclusion that the organization should try, in each of the product markets that it serves, to push down costs incurred and push up benefits delivered. That conclusion too closely approximates the advice to buy low and sell high, however, to be worthy of distinctive celebration. What turbocharges the framework for positioning analysis is the idea, implicit in Emerson, that competition mediates between product costs and benefits on the one hand and attainable margin-volume combinations on the other. Margin times volume is equal, of course, to (positioning) value.

To capitalize on this idea, consider the simple depiction of product market economics in Exhibit 4.4. A buyer, faced with competing products, will tend to select the one that maximizes (real or imagined) net benefits: the gross benefits from a product minus the price he or she must pay for that product. The net return available to the organization per unit of product, its *margin*, will equal the gross benefits of the product minus its costs as well as the level of net benefits it must deliver to buyers to attract them in the face of competition. Margin will, as a result, vary inversely with the intensity of competition. When the intensity of competition is low, a business can capture nearly all of the gap between product benefits

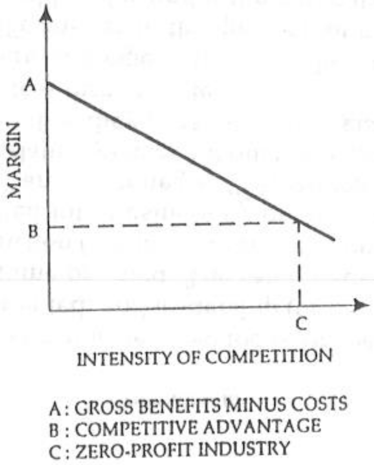
Exhibit 4.4 Product Market Economics



and product cost (its *efficiency*) as margin, i.e., successfully engage in value pricing. In contrast, when the intensity of competition is high, the business' margin will not be much higher than its *competitive advantage*, the extent to which the benefit-cost gap for its product exceeds the benefit-cost gaps for competitors' products. It is important to supplement considerations of efficiency with considerations of competitive advantage because even apparently minor operating differentials *vis-à-vis* product market competitors can have major implications for financial performance. Wal-Mart, for example, has historically enjoyed an operating margin advantage of about three percentage points *vis-à-vis* K Mart. This may not seem like very much but it has, in conjunction with Wal-Mart's faster growth, ensured that the market-to-book value of its common stock is more than seven times as high as K Mart's (as of the end of 1990).

Michael Porter has suggested an operational way of assessing the effects of competition along a continuum as opposed to a high-low dichotomy (see Exhibit 4.5). Porter proposes using the (possibly hypothetical) average performer in the industry as the benchmark, and relating the organization's margin to that competitor's. His 1980 book, *Competitive Strategy*, develops a systematic procedure for assessing average industry margin. The quantity that must be

Exhibit 4.5 Margin and the Intensity of Competition



added to the industry average to estimate the margin the organization can expect for itself from a particular position is the topic of Porter's 1985 book, *Competitive Advantage*.

Using the median-ability competitor as the benchmark is, of course, just one of several possibilities. It is not equally sensible in all situations. For instance, it would have been rather roundabout for Lockheed to conceive of and compare itself with some hypothetical average competitor in trijets instead of its only direct rival, McDonnell Douglas. In the Owens-Corning Fiberglas case discussed later in this chapter, substitute technologies turned out to be the appropriate benchmarks. In the chemical sector, proposed capacity additions are often benchmarked relative to "leader" and "laggard" plants because of the importance of understanding where they will be located on the industry cost curve. In general, the (groups of) competitors that the organization expects to run up against most in either product or factor markets tend to make the best benchmarks. The precise choice of benchmark does not alter the fundamental logic of margin analysis: the margin available to the organization will equal the margin of the benchmark competitor plus the organization's competitive advantage (or minus its disadvantage) relative to that benchmark.

When buyers vary, as they usually do, in terms of either their needs, the cost of fulfilling those needs or the intensity of competition to consummate them, margin analysis must be supplemented with attention to the margin-volume trade-off that confronts the individual organization in each of its product markets. This simple idea underpins the enormous literature on segmenting the product market. Segmentation is a rough but ready way of picking up differences among (sets of) buyers along the dimensions listed above. At the level of dichotomy, the organization can either skim the cream off a relatively few, high-margin buyer segments (a *specialist* strategy) or pursue a broader target in the hopes of making up in the way of volume what it thereby loses in the way of average margin (a *generalist* strategy). More generally, the individual competitor faces, in all but perfectly competitive (and therefore strategically uninteresting) situations, a downward sloping demand curve for its product, and has some leeway in deciding how far up or down that curve to operate. On occasion, as in the case of the TriStar, such analysis may even tell the strategist that the organization cannot attain a profitable price-sales combination, i.e., a viable competitive position.

Porter (1980; 1985) has dichotomized the trade-off between margin and volume into a distinction between focus (or specialist) strategies, which are margin-oriented, and leadership (or generalist) strategies, which are more volume-oriented. The same trade-off underlies the more dynamic distinction (originally drawn by population ecologists and recently imported into business by organization theorists) between "K strategies" and "r strategies."[7] K-strategists, or specialists, are supposed to be relatively choosy about the segments they expand into (or the opportunities they pursue); r-strategists, or generalists, are supposed to be less discriminate.

While such "generic strategies" are useful heuristic devices, they do not offer a specific answer to the question of how much volume the organization should go for under the particular strategic option that it elects to pursue. The answer to that question tends, in the short run, to be governed by the amount of capacity it has precommitted to the product market in question. In the long run, capacity is variable, making matters a bit more complicated. Theory suggests, nonetheless, several conditions that favor generalist or high-volume strategies: limited heterogeneity in buyers' needs, the ability to charge different prices in different segments, significant fixed costs that do not vary with the number of buyer segments served, and the possibility of improving products by incurring additional fixed costs.[8] The opposite conditions are relatively favorable to specialist strategies.

Empirical research indicates, in addition, that the way a competitive advantage or disadvantage is channeled into value also seems to depend on its type. Cost-based advantages over competitors are primarily absorbed into extra volume, whereas benefit-based advantages tend to be taken in the form of fatter margins and, in some cases, greater volume as well (Caves and Ghemawat 1989). To illustrate, low-cost Korean competitors have adopted a low-margin/high-volume approach to the U.S. market for televisions, whereas Sony, whose TVs offer some unique benefits to buyers, concentrates on preserving its margins. Of course, this pattern is simply an average tendency; its optimality must be rechecked in each situation. As part of deciding whether to build a better mousetrap, the strategist must figure out *from the specifics of the situation* whether such a mousetrap is best priced high, attracting relatively few buyers, or lower, attracting rather more of them.

That covers the contents of Exhibit 4.2, which can now be reviewed in full. Apply the method for tracing product costs and product benefits discussed in the previous subsections to each of the commitment options available to the organization *and* to a benchmark competitor or group of competitors, with an emphasis on the dimensions along which the choice might open up significant competitive differences. Then use the logic of product market competition to identify the best margin-volume combination each option is likely to afford. This may require collapsing the buyers into a manageable number of strategic segments and building up the analysis of margin-volume combinations from the segment level (as in the Owens-Corning Fiberglas case discussed later). The identity between margin-times-volume and value will determine the positioning value of each option.

The Passage of Time

The framework for positioning analysis presented in Exhibit 4.2 is usually couched in timeless terms.[9] Lockheed's experience with the TriStar should, however, have suggested that a timeless snapshot of the margin-volume combinations afforded by a particular option may not be an adequate basis for analyzing it: that margin-volume combinations may need to be traced out over time. The strategist must worry about the passage of time whenever the time-shape of cash flows is expected to vary significantly over the options being considered. The multiyear implementation lags associated with many strategic options frequently combine with the logic of discounting to require systematic intertemporal trade-offs. At a constant annual discount rate of 15%, for instance, a dollar of value obtained with a two-year lag is presently worth 75 cents, 50 cents if obtained five years down the road, and only 25 cents if obtained ten years into the future. Effects this large cannot sensibly be ignored. As a result, the passage of time must, more often than not, be brought back into the picture.

This requirement is responsible for the appeal of the two simplifying assumptions of positioning analysis. Assumption 1, of zero differential reactions, abstracts away from action-reaction sequences to let the strategist focus on a single-player decision problem instead of a much more complicated multiplayer problem (i.e., a full-blown dynamic game among several players, each out to maximize its own net present value). Assumption 2, of zero revisions, abstracts away from expectations of changes in expectations to let the strategist focus on her or his best guess about what the passage of time holds in store. The two simplifying assumptions thereby facilitate the translation of the timeless framework for positioning into a timeful one.

Given these two assumptions, the positioning values of strategic options are sensibly estimated in terms of the *discounted cash flow* (DCF) anticipated from each of them. The anticipated period-by-period product of margin and volume figures in the numerator of DCF analysis of value streams, and the appropriate discount rate in the denominator. How considerations of time preference, inflation and risk should be distilled into a discount rate is properly the subject of finance.[10] Strategy, in contrast, is concerned with what seems to be the real locus of action: the numerator of DCF analysis. The strategic task, in other words, is to understand the evolution of the (optimal) margin-volume combination associated with each option.

The several possible methods for doing so can be ordered in terms of how demanding they are. One method, employed by Reinhardt (1973), is to analyze margin-volume combinations in detail for each and every time period (typically a calendar year). Another is to designate a particular time period as the *reference frame* that is to be analyzed in detail, and to use it as the basis for interpolations from here to there and extrapolations from there to beyond. Yet another is to collapse time into the operational categories of the short run and the long run. Finally, in a few situations (such as the one confronting Owens-Corning Fiberglas that is discussed in the next section), a focus on the timeless long run may suffice.

Note that none of these methods gets around the problem that commitments often have open-ended effects. When this is the case, the margin-volume implications of strategic choice cannot be analyzed in full (i.e., infinite) depth.[11] The only practical way of dealing with this problem is to specify an artificial *horizon*, a period beyond which the evolution of margin-times-volume will not be modeled in significant detail. In terms of the year-by-year method, value should be modeled in much greater detail before the horizon than beyond it. If one works with a reference frame, it should be set no farther out into the future than the horizon. The horizon can also be thought of as marking the boundary between the short run and the long run. It should be thought of as subsuming the latter under timeless long-run analysis.

How far out into the future should the horizon be set? While the answer must be customized to the situation, two general guidelines *can* be offered. First, the interval between the present and

the horizon should be at least as long as the longest implementation lag implicit in the set of options being taken seriously. Second, the extent to which the selected interval exceeds the longest implementation lag should depend on how quickly uncertainty blurs the ability to predict differences in value from one period to the next. In situations marked by high uncertainty, set the horizon relatively close to the longest implementation lag. If, in contrast, trends in value can be predicted with some confidence beyond that time, set the horizon farther out into the future.

Judging by the way they handle commitments of physical capital, most U.S. companies employ horizons that extend no more than a decade into the future, with focal points around three, five and ten years (Pohlman, Santiago and Markel 1988). Too many of them, I suspect, do themselves a disservice by insisting on a fixed horizon for all choices subject to formal analysis, those that involve little commitment as well as those that involve a lot. For reasons discussed in the previous chapter, there should be more variability in the choice of horizon: significant commitments should be analyzed in extra depth. A shift toward the appropriate level of variability would presumably shift the average horizon for *strategic* analysis farther out into the future.

Analysis up to the horizon, if any, should account for investment or disinvestment differentials (e.g., the expected costs of developing a better mousetrap) as well as variations in the operating cash flows associated with different options, and should also reckon with trends, broadly defined. One obvious trend, which is the basis of the extensive literature on the product life cycle, concerns the growth (or shrinkage) rate of the served market. Growth, even if anticipated, tends to have a positive effect on the margins as well as volumes of product market competitors (Bradburd and Caves 1982). Once again, however, this is a broad empirical pattern whose validity must be assessed for the situation at hand rather than simply assumed. There are many trends other than market growth that may also repay attention: the evolution of buyer needs, the general rate of process and product innovation, shifts in competitive scale, input costs and exchange rates, developments in linked industries and in government policy, and so forth (Porter 1980, chap. 8). Because of the simplifying assumptions that underlie positioning analysis, developments along each relevant dimension can be treated as exogenous. One best guess about each relevant trend will suffice for the analysis of *all* strategic options.

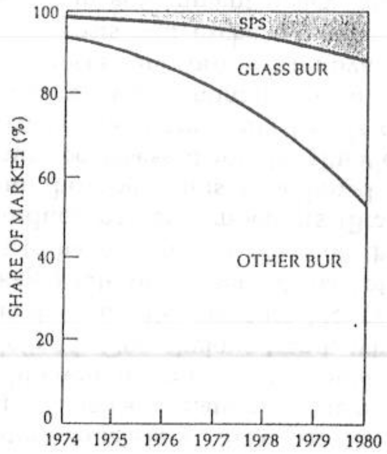
The evolution of margin and volume at or beyond the horizon has to be handled in cruder ways because uncertainties take over as one tries to forecast farther and farther out into the future. As a result, cycles and one-time discontinuities that far out are usually ignored, and only the simplest, most significant trends taken into account. That does not mean, however, that the deep future is irrelevant to the analysis: commitment-intensive choices are important precisely because of their long-run implications. While the estimates of margin and (rate of growth of) volume that are the key parameters in the long run should, in the first instance, be derived from the analysis of product market competition, they need to be supplemented with considerations of sustainability and flexibility, as discussed in chapters 5 and 6.

POSITIONING ANALYSIS CAN USEFULLY BE REILLUSTRATED.

An additional example of positioning analysis may be useful in several respects: to squelch suggestions that careful analysis always leads to paralysis, to highlight a somewhat different set of analytical points from the TriStar example and just to make the last section's message more vivid. Consider, for all these reasons, the choice among membrane technologies that Owens-Corning Fiberglas (OCF) was faced with in the U.S. commercial roofing membrane market in 1980.[12]

The sorts of commercial roofing membranes sold in the United States had changed significantly since the early 1970s (see Exhibit 4.6). Glass built-up roofing (BUR) membranes had seized a significant share of the market from the organic and asbestos BUR membranes that had overwhelmingly dominated it in the past, and single-ply systems (SPS) of varying chemical composition had also gained a foothold.[13] OCF had pioneered glass BUR membranes and still dominated that category with its Perma Ply-R product. Perma Ply-R continued to register volume gains in 1980, but its margin had started to come under pressure. Instead of ignoring the problem in the hope that it would go away or focusing on the most direct threat (in this instance, on the weaker-but-cheaper mats that had been introduced by glass BUR competitors), OCF recognized that the threat from substitutes was real, and that if it waited for single-ply membranes to penetrate further before choosing how to act, it might lose its room for maneuver. It had to try to assess the market potentials for different types of BUR and single-ply membranes ahead of time. This involved comparing the long-run competitive positions of these products on the basis of what was known about them in 1980.

Exhibit 4.6 Market Shares of Commercial Roofing Membranes



On the cost-analytic front, membrane type was, by assumption, the single most important cost driver to be examined. The prices of single-ply membranes and estimates of the margins earned on them by competitors suggested that they cost about twice as much per square foot of roof covered as did BUR membranes. By implication, the SPS-to-BUR threat, if any, came from the benefit side rather than the cost side. OCF focused, therefore, on understanding benefits delivered to buyers by competing membrane types in much greater depth than the costs incurred in their manufacture. This required thinking through how membranes were bought and used.

Although the expense of roofing was ultimately borne by building owners, the analysis focused on roofing contractors, who actually installed roofs, as the *real* buyers: they accounted for the choice of product type in the majority of cases. There were many thousands of roofing contractors in the United States in 1980. Materials accounted for the bulk of their costs. According to a survey by their trade association, roofing contractors got most of their business by submitting the lowest bid, and most of them had already tried single-ply membranes. As all this might indicate, roofing contractors were very cost-sensitive: the characteristic that they most wished to minimize in their choice of membrane type was the total cost of installing the roof. The price of the membrane was just one element of the costs incurred by them: other materials and labor also accounted for significant chunks of costs. They would be willing to pay a dollar more for a particular type of membrane if it lowered their other costs by more than a dollar. So the extra benefits delivered, in terms of the characteristic of cost-effectiveness, by one type of membrane as opposed to another equaled the membrane-unrelated costs for the second type minus those for the first.

It now became clear why some buyers were willing to purchase single-ply membranes at a price of about $60 per 100 square feet rather than the three layers of Perma Ply-R required to cover the equivalent area at a total expenditure of about $15. For a large, ballastable roof requiring an intermediate level of insulation, for example, use of a single-ply membrane might save the roofing contractor $27 in insulation costs (because the most cost-effective type of insulation on the market, bead board, was incompatible with the hot asphalt in BUR sandwiches), about $10 in the costs of other materials, primarily asphalt, and about $10 in labor costs.

The example should have suggested that the relative benefits delivered by different types of membrane depended on the parameters of the roof to be laid. Not all roofs were insulated; on the ones that weren't, BUR looked rather more competitive. The same was true for roofs on buildings that could not bear the load of ballast: single-ply membranes had to be attached to such roofs with nails or adhesive, which was a much more time-consuming process than simply holding them in place with ballast.[14] Roof size was a factor as well because it tended to be inversely related to the amount of flashing that had to be installed to seal the roof perimeter and "penetrations" such as chimneys. The flashing for BUR systems was relatively expensive and costly to install, implying a comparative advantage for them in large, less flashing-intensive applications. To take account of such systematic variations, OCF segmented the commercial roofing market along the dimensions of insulation requirements, ballastability, and roof size to yield 18 (3 × 2 × 3) segments. It focused the rest of its analysis on trying to understand the likely long-run competitive positions of the different types of membranes at the level of individual segments.

The obvious place to start was by identifying the lowest installed-cost roofing system in each segment in 1980. The results of this exercise, reported in Exhibit 4.7, merit some discussion. The only BUR systems that appeared to be competitive in such terms, glass-based ones like OCF's, were favored by minimal insulation requirements and lack of ballastability, and on relatively large roofs. Ethylene propylene diene monomer (EPDM), the type of single-ply membrane that had achieved the largest share by 1980 (about 7%), looked competitive on relatively large roofs that required insulation and could be ballasted. The most surprising result, however, was that another type of single-ply membrane that held only 2% of the overall market in 1980, modified bitumen (MB), looked low cost in about 32% of the market—on small roofs—because of its extremely cheap flashing. The corresponding market potential figure for glass BUR was 40%, and for EPDM 28%.

Exhibit 4.7 Lowest Installed-Cost Roofing System by Segment*

	BALLAST ALLOWED			NO BALLAST ALLOWED		
	SMALL ROOF	MEDIUM ROOF	LARGE ROOF	SMALL ROOF	MEDIUM ROOF	LARGE ROOF
MAXIMAL INSULATION	MB	EPDM	EPDM	MB	BUR	BUR
SOME INSULATION	MB	EPDM	EPDM	MB	BUR	BUR
MINIMAL INSULATION	MB	BUR	BUR	MB	BUR	BUR

*Membranes factored in at 1980 market prices.

Taken at face value, these market potential numbers might have suggested that the prospects for glass BUR weren't that bad: that it might even pick up a few percentage points of market share since its 1980 share stood at "only" 36%. To have stopped with these numbers, however, would have been to confuse prices (outcomes) with the thing underlying them that is of real interest, namely, competitive position. The procedure for positioning analysis discussed in the last section depends on comparisons of costs incurred and benefits delivered by competitors instead of prices charged. The distinction matters in the OCF case because it was clear in 1980 that the EPDM pricing structure was about to collapse: Carlisle, the pioneer, had so far managed to skim the market with prices that had 50% margins built into them, but huge amounts of EPDM capacity were in the process of being added by other companies, particularly other tire manufacturers. What was required in order to figure out competitive position—which type of membrane could ultimately undersell all the rest in which segment—was a comparison of total installed costs that accounted for membranes not at market prices (as in Exhibit 4.7) but at costs to manufacturers. Redoing the installed cost analysis on this basis, segment by segment, and adding up the results exposed the true dimensions of the threat to glass BUR, which had much less to play with in the way of initial margin: its market potential fell to 15%, with EPDM and modified bitumen splitting the remainder.

Even though EPDM and MB came out even on this "market potential at cost" comparison, they did not on several others. Consider, first, competition among different types of membranes. Modified bitumen, where it was low cost, had a bigger advantage over the next lowest-cost system than EPDM did in the segments where *it* was low cost in 1980. This advantage could be expected to grow over time and modified bitumen's market potential to expand, because its costs were forecast to inflate relatively slowly.[15] Consideration of competition *within* membrane types also inclined OCF toward MB. Modified bitumen had attracted fewer, less cutthroat competitors than EPDM. Even if competition among MB producers reduced their average margin to zero, OCF felt that it could achieve lower costs than them because the modified bitumen membrane used some glass mat as a reinforcement, and OCF knew how to make stronger glass mat than anyone else. EPDM, in contrast, did not offer OCF the prospect of any advantage.

This analysis led directly to action. OCF entered the modified bitumen market by forming a strategic alliance with an earlier entrant, Derbigum, which was partly owned by 50 of the largest roofing contractors in the United States, and later consolidated its entry by acquiring Derbigum. It immediately began to invest R&D dollars in the development of a more cost-effective MB membrane, and managed to introduce one in 1984. It also began work on, and eventually introduced, an insulation material designed to complement MB better than any other insulation on the market. This strategic thrust seems to have worked out rather well: OCF has become the leader in MB membranes which have, in turn, become the single largest element of the commercial roofing market and continue to enjoy healthier margins than membranes under more pressure from substitutes. Note, in particular, the way in which OCF's choice about the position that it would pursue guided its subordinate choices. It is in this indirect but important sense that considerations

of positioning can help with the implementation of strategic options as well as with their selection.

To wrap up this discussion, compare the OCF story with the Lockheed story. One of the two obviously handled the choice confronting it more adroitly than the other. There is another, more interesting difference as well. Note how *effective* positioning analysis can vary considerably, to external appearances, from one situation to the next. What is important in positioning analysis is not its form, which should probably be customized to the choice being considered, but its logic, which was discussed in the last section.

POSITIONING ANALYSIS IS AN INCOMPLETE BASIS FOR STRATEGIC CHOICE.

Positioning analysis has come a long way since Emerson orginally proposed that the choice between building and not building a new type of mousetrap be based on an assessment of whether it would offer an advantage *vis-à-vis* competing mousetraps. The modern framework for positioning analysis focuses on the competitive positions of businesses instead of products. It is much more specific than Emerson ever was about how to assess competitive position. It recognizes that the benefits afforded by a superior competitive position must be weighed against the costs of achieving it. Stretched out over time, it can also account for exogenous trends, such as the exogenous rate of improvement of competing mousetraps.

This progress notwithstanding, positioning analysis is an incomplete basis for strategic choice. In regard to the choice about whether to build a new type of mousetrap, for example, it misses out on two key considerations. First, new types of mousetraps that *have* succeeded in the marketplace (e.g., spring traps, repeating traps and glueboards) have not appreciably enriched their respective innovators, largely because of their attractions for imitators as well as mice. Second, to focus on the prospects for success of a new type of mousetrap would be to focus on the tip of the iceberg because the overwhelming majority of attempts at product innovation do not even make it as far as market testing.

Both sorts of omissions can be restated more generally. First, positioning analysis glosses over endogenous reactions (e.g., imitation of new types of mousetraps that prove to be breakthroughs): it tends to assume away differences in the reactions of competitors and other interested and influential parties to the organization's choice of one strategic option (intended long-run position) as opposed to another. Second, it fails to account for the way in which the receipt of new information may induce the organization to revise its course of action (e.g., terminate a mousetrap development program that is proving to be a bad idea): it assumes that the organization will persist, without further recourse, with the course of action favored by the option it initially elects to pursue. These omissions are rectified, respectively, in the chapters on *sustainability* and *flexibility* that follow. What needs to be noted here is that positioning analysis should be treated as the analytical starting point rather than the stopping point.

SUMMARY

Positioning analysis involves a first-cut evaluation of commitment options. It capitalizes on the insight that commitments affect competitive positions in product markets: considerations of product market competition can therefore be pressed into service to assess the (positioning) values of commitment options. Positioning analysis does, however, abstract away from reactions to the organization's choice among its commitment options, and from the ease with which the selected option can be revised. While these assumptions are convenient, comprehensiveness demands that they be relaxed.

5

Sustainability: Claiming Value

> Every situation bears the seed of its own reversal. This is the law of nemesis: Nothing good lasts indefinitely, because others will want to share it.
>
> —David S. Landes, *Revolution in Time*

The last chapter suggested evaluating strategic options in terms of their implications for the organization's position(s) in the product market(s) that it serves. Such positioning analysis represents the analytical point of departure rather than the end of the journey. The next analytical step is to recognize that valuable product market positions invite responses by nonowners—competitors, buyers, suppliers and even employees—that tend to shrink the value passed through to the organization's owners. *Sustainability* analysis addresses the scope and speed of such shrinkage. It is meant to be overlaid on assessments of positioning value.

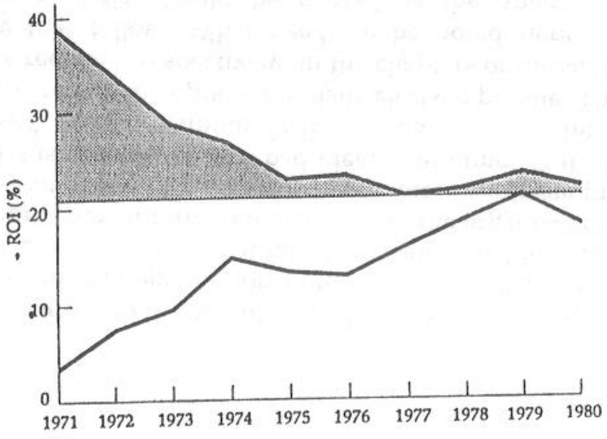
SUSTAINABILITY ANALYSIS IS VERY IMPORTANT.

Managers seem to underestimate the importance of sustainability analysis.[1] For some evidence on this point, consider the guessing game described next. I tracked the margins (return on investment, or ROI) reported over a ten-year period, from 1971 to 1980, by the

692 business units in the PIMS database for which such data were available.[2] I split this sample into two equally sized groups based on 1971 ROI and then, keeping businesses in the groups in which they started out, I tracked the group averages through 1980. The (initially) top group's ROI in 1971 was 39% and the bottom group's 3%. It is safe to say that the businesses in the top group started out with generally superior positions, and those in the bottom group with generally inferior ones. What do you think happened to the 36-point spread between them by 1980?

Managers confronted with this question tend to guess that the initial ROI spread between the two groups shrank by one-third to one-half over the ten-year period. Exhibit 5.1 indicates that the correct answer is greater than nine-tenths. By implication, managers understand the law of nemesis but seem to come up short in assessing the scope and speed of its operation.

Having said that, I hasten to steer the reader away from the conclusion that sustainability tends to be so close to zero that it is practically irrelevant. First, even if initially superior margins are expected to converge on the average level by the tenth year, the degree to which they can be sustained in the interim is surely of interest. The shaded area in Exhibit 5.1 indicates its importance to the average business in the top half of the PIMS sample. Second, convergence actually *wasn't* complete by the tenth year for the sample: the (initially) top group's average ROI was 21.5% in 1980, and the bottom group's 18.0%. A long-run spread of three-and-a-half percentage points is nothing to sneer at.[3] Third, the convergence of margins overstates the convergence of what is really of interest, margin-times-volume (value). A business earning a 39% ROI, the average for the top group in 1971, is unlikely to insist that all new investments deliver such a high rate of return, and likely to be unwise if it did.



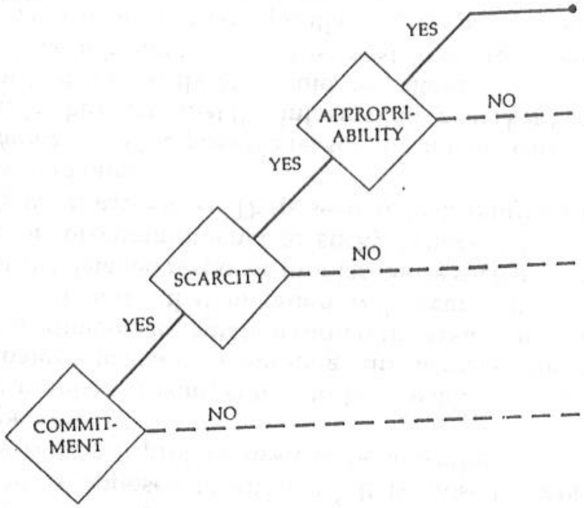
If, in spite of these assurances, you are still taken aback by the extent to which the group averages converged, remind yourself that they mask tremendous variation. Wal-Mart is a particularly inspiring stand-out: it has ranked in the top percentile of all (but the smallest) U.S. corporations in terms of *both* profitability and growth for close to two decades now. Nearly thirty years have passed, in fact, since Mr. Sam Walton spotted the sustainability-related advantages of being the first to open a discount store in a town large enough to support one such store but not two. The analysis in this chapter systematizes the sorts of considerations that led Wal-Mart to buck the conventional wisdom and averages.

THE SUSTAINABILITY OF SUPERIOR PRODUCT MARKET POSITIONS HINGES ON COMMITMENTS TO STICKY FACTORS.

What determines the extent to which a superior product market position is likely to prove sustainable over time? That question must be answered from a factor market rather than a product market perspective. The reasons have already been discussed in chapter 2. In the absence of the factor market imperfections implied by commitment to sticky (durable, specialized, untraded) factors, the potential for frictionless entry and exit would push profits down (or up) to zero in the twinkling of an eye, regardless of initial positions. The imperfections implied by factor stickiness are therefore necessary for sustainability.

Commitment to sticky factors is not, however, sufficient for sustainability. Exhibit 5.2 outlines the two other conditions that must also be fulfilled for superior product market positions to yield sustained positive profits. First, the sticky factors that underpin them must continue to be *scarce*. Second, the owners of the organization must be able to *appropriate* some of the scarcity value that accrues to such factors. Each of these conditions deserves elaboration.

Exhibit 5.2 Conditions for Sustainability



The importance of scarcity in this context can be highlighted with the air *versus* diamond example beloved by economists. Why is the air in your lungs worth less, at market prices, than the gemstone that may be on your finger? Part of the reason is that less cost is incurred in transforming the air in the atmosphere into something that you are willing to breathe than in transforming a diamond in the rough into something that you are willing to wear. But this cost differential is not the only element of the difference in prices. Differential scarcity also takes a hand. Breathable air is available in such abundant quantities that it has virtually no scarcity value in most locations. Gem-quality diamonds are clearly much scarcer. The implied difference in scarcity values accounts for most of the difference in the prices that air and diamonds can command.

The scarcity of sticky factors depends on the relation between their supply and the demand, derived from the product market side, for their services. Sustainable (positive) scarcity value requires excess demand; excess supply, in contrast, can lead to sustained losses. To test whether a strategic option offers sustainable scarcity value, it is useful to ask two kinds of questions. The first question is why excess demand won't induce competitors, actual or potential, to add to the supply of the sticky factor(s) supposed to be scarce: this is the threat of *imitation*. The second question is whether competitors, even if they are unable to attack scarcity value directly, won't be able to find a way around it: this is the threat of (factor) *substitution*.

The third condition for sustainability listed in Exhibit 5.2, appropriability, is of distinct interest because even when the factors stuck to the organization afford it scarcity value, the ability of its owners to pocket that value cannot be taken for granted. Nonowners out to further their own interests may be able to siphon off some of that value: this is the threat of *holdup*. They, particularly employees, may also squander some of it: this is the threat of *slack*. In other words, holdup threatens to divert scarcity value and slack to dissipate it.

In summary, owners who would appropriate scarcity value must contend with the law of nemesis, which threatens both the scarcity value of the organization's bundle of sticky factors and the fraction of that value the owners can expect to appropriate. More specifically, scarcity value is threatened by imitation and substitution, and appropriability by holdup and slack. These threats to sustainability have two things in common: the intensity of each tends to increase with the amount of (positioning) value generated, and each tends to take time to make its effects felt. They will be elaborated on one at a time, beginning with threats external to the organization and working in.

IMITATION IS A DIRECT THREAT TO THE SCARCITY VALUE OF STICKY FACTORS.

Imitation threatens the scarcity value of sticky factors by expanding their supply or, when that supply is relatively fixed, by bidding up their cost. Classical economics tells us that imitation may, at the margin, shrivel scarcity value to zero. Informational and motivational considerations suggest that imitation may proceed even farther. Informational problems that induce this disturbing possibility include lags in observing competitors' commitments, correlated expectations about demand and adverse selection of the sort exemplified by the winner's curse (which is discussed in chapter 7). Excessive imitation can also be motivated by the managerial preference for expansion over contraction, compensation schemes based on performance relative to competitors and envy.

According to the cross-sectional evidence, imitation is endemic. In industries in which capacity is the most important sticky factor, an addition by one player usually triggers additions by others aimed at preserving their capacity shares. Attempts to build one's customer base tend to induce attempts by competitors to defend or develop their own: case studies such as the one presented later in this section suggest that maneuvers and countermaneuvers along this dimension often cancel out. Attempts at product differentiation based on R&D as opposed to marketing are vulnerable on several counts: competitors secure detailed information on the bulk of new products within a year of their development, patenting usually fails to deter imitation, and imitation tends to cost a third less than innovation and to be a third quicker. Process innovations do not seem to be significantly less imitable than product innovations.[4]

The most obvious way of analyzing the threat of imitation (as well as the other threats to sustainability) is to figure out which players will be most affected by the organization's strategic choice, assess their likely responses and, to the extent that those responses appear threatening, think about how they can be thwarted or blunted. But while this sort of analysis is sanctified by theory, it requires extensive information about all the competitors, actual and potential, that might respond differently to the organization's choice of one option as opposed to another.[5] It is most tractable, as a result, when response profiles need to be assembled for just one or two competitors.

When the number of competitors to be considered is larger, or when the analysis focuses on the long run, it makes more sense to look for impediments to imitation (under the assumption, implied by the law of nemesis, that imitation will occur if it is feasible) than to construct detailed response profiles. Since such impediments usually rest on precommitments to sticky factors, I will refer to them as *early-mover advantages*. There seem to be five principal forms of early-mover advantages.[6]

Private Information. One possible reason for moving early is better information. To the extent that this information can be kept private—to the extent that it is costly for would-be imitators to tap into it—imitation will be inhibited. Privacy is most likely to obtain when information is tacit rather than specifiable (i.e., doesn't lend itself to blueprinting), when it is vested in relatively few parties and when those parties are locked into long-term relationships with the early mover.

Size Economies. Size economies refer to the (possible) advantages of being large. They come in three different varieties: *scale economies*,

which are the advantages of being large in a particular business at a particular point in time; *learning economies*, which are the advantages of being large in a particular business over time; and *scope economies*, which are the advantages of being large across interrelated businesses. If there *are* size economies, the early mover may be able to deter imitation by committing itself to exploiting them. That possibility depends on the would-be imitator's fear that if it tried to match the early mover's size, supply might exceed demand by enough to make it rue the effort.

Enforceable Contracts/Relationships. Early movers may be able to enter contracts or establish relationships on better terms than those available to late movers. When such arrangements are enforceable, competitors may desist from imitation on the grounds that even if it "succeeded," it would leave them at too much of a disadvantage compared to the early mover to be worthwhile. Enforceability may derive either from third-party enforcement or from self-enforcement. Examples of the former are provided by property rights and other formally specified contracts that are enforceable in court. Examples of the latter include relationships that haven't been formalized to that extent but are nevertheless expected to be sustained by buyer/supplier switching costs, risk aversion or inertia. Note that relationships with intermediaries, such as distribution channels, can also have these characteristics.

Threats of Retaliation. There are a number of reasons, including the asymmetries cited above, why early movers may be able to deter imitation by threatening massive retaliation. Talk of retaliation is, however, cheap. To be credible, it must be backed up by both the ability and the willingness to retaliate. Retaliatory moves that satisfy both conditions may either be directly profitable or reflect the early mover's demonstrated willingness to be tough with interlopers in spite of the immediate losses to itself.

Response Lags. Even if information isn't impacted, size isn't a source of economies, contracts/relationships aren't enforceable, and retaliation isn't credible, imitation usually requires a minimum length of time. From the early mover's perspective, this can be described as a response lag. Response lags are the sum of *observation lags* and *implementation lags*. Although such lags do not, by themselves, deter imitation, they obviously defer its impact.

This discussion of early-mover advantages should not, however, be misread to imply that organizations should *always* commit as early as possible. While moving early may reduce the threat of imitation, it may also involve extra cost or risk. As a result, the only sensible conclusion about early versus late timing is the one drawn long ago by Alfred P. Sloan: If you are late, you have to be better.

The threat of imitation and the impediments to it can be illustrated with a case, that of the U.S. cigarette industry between the early 1950s and the late 1960s. The U.S. cigarette market had historically consisted of two nonfiltered segments, each of which had been dominated since its inception, more or less, by one brand. In the early 1950s, however, health concerns shook up the status quo by triggering a shift to filtered cigarettes, which came to account for over 80% of the market within two decades. The experience in the nonfiltered segments had suggested the value of securing dominant positions in the filtered segments that were emerging. The response of each of the six major cigarette companies was to launch new (or extended) filtered brands with heavy advertising support aimed at establishing them as top sellers within their respective segments.

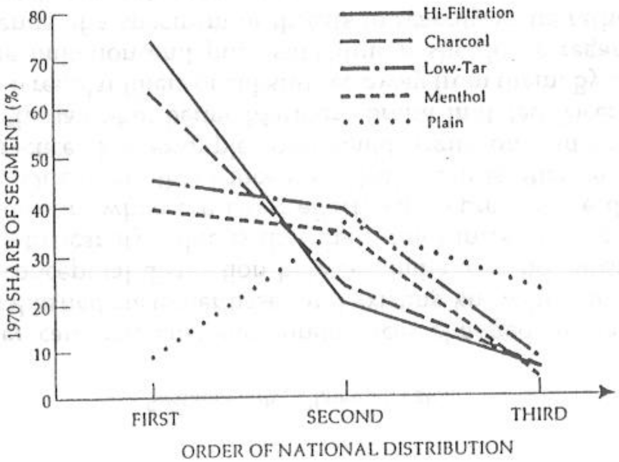
As a result, the numbers of cigarette brands exploded between the early 1950s and the late 1960s. By 1967, more than 80 total varieties, distinguished by size, filtering, mentholation, and packaging, were available (up from 18 varieties in 1951). Advertising also soared: the industry's advertising-to-sales ratio jumped from 3.8% to 8.7%, reflecting a fivefold increase in dollar expenditures that was more or less evenly distributed among the big six. These hikes, which can be regarded as imitative from the standpoint of individual producers, began to take a heavy financial toll. The investment bank of Smith Barney, for instance, publicly reckoned that the $225 million dollars the cigarette companies spent on TV and radio advertising in 1968 would have translated into that much extra operating income if such advertising had been halted. In addition, a halt would have forced federally subsidized antismoking ads (broadcast in a 1-to-3 proportion to prosmoking ads) from the airwaves, shoring up long-run demand. The profits from attempting to build up customer bases hadn't simply sunk to zero by the late 1960s; they had fallen below that level.

Although the cigarette companies understood all this, they maintained their nominal advertising levels over the 1968 to 1970 period and further increased product variety. In the terminology of game theory, they were stuck in a prisoners' dilemma and could not, acting on their own, effect jointly beneficial cuts in brand introduction rates or advertising levels, or at least not large ones. They

were delivered from this stalemate in 1971 by a federal ban on the broadcast advertising of cigarettes. The cigarette industry had not been averse to such a ban. In fact, it had at one point suggested accelerating its implementation. By all accounts, it now sighed with relief that this hazard to its financial health had been removed. Without governmental intervention, the spiral of imitation could have led to long-run financial losses, not just relatively short-lived ones.

The losses that marketing mania inflicted on the cigarette industry in general mask some individual successes: some of the new filtered brands did succeed at establishing dominant, apparently inimitable positions. Such inimitability seemed to rest, for the most part, on early-mover advantages. The evidence is summarized in Exhibit 5.3, which reveals that in four of the five segments that the filtered submarket split into through 1970, there was a perfect correlation between a "top three" brand's order of entry into its particular segment and its rank (in market share terms) within the top three. The odds are less than 1 in 250 that this observed association between order of entry and market share rank could have been generated by a purely random process involving no early-mover advantages. The advantages that seem to have been the most important in this particular case include scale economies in brand marketing, self-enforcing relationships with customers based on brand loyalty, re-

Exhibit 5.3 Top Three Brands by Filter Segment



sponse lags in introducing imitative brands to compete with pioneering ones in newly identified segments and credible threats of retaliation by the pioneers. These advantages clearly cascaded in allowing some early brands to sustain their scarcity value.

The experience of the cigarette industry also reminds us, however, that moving early is no panacea. This can most clearly be seen in plain filters, the largest of the five filtered segments that emerged and the only one that did not exhibit a perfect correlation between the top three brands' market share ranks (in 1970) and their order of entry. Viceroy, a Brown and Williamson brand, was the first to achieve substantial sales in this segment. But in 1955, it was overtaken by the second-mover, R. J. Reynolds' Winston brand, which had successfully emphasized taste as well as filtration. By the end of the decade, Viceroy had also been overtaken by the third-mover, Philip Morris' Marlboro brand.

Marlboro is the brand to focus on, because it eventually overtook Winston as well as Viceroy and is now the world's single most profitable brand of nondurable consumer good. Originally targeted at female smokers, Marlboro was repositioned in 1955 with a new image and a new package. Its revised image, of a cowboy, was to become the most successful cliché in cigarette advertising. Its revised package, a crush-proof, tear-strippable, flip-top that could fit into a regular vending machine, also embodied several innovations. The Marlboro brand succeeded not because it followed some kind of mechanical timing rule (the third-mover in a specific cigarette segment isn't usually expected to do exceptionally well) but because in the minds of many smokers, its new image and package were inimitable.

In summary, brand competition in the cigarette industry reinforces the three principal messages of this section. First, the imitative addition of sticky factors is a serious threat to the sustainability of their scarcity value. Second, impediments to imitation rest on precommitments to sticky factors. Third, while it is natural to think about fruitful precommitments as early-mover advantages, an emphasis on always moving earlier than competitors would be misplaced.

SUBSTITUTION IS AN INDIRECT THREAT TO THE SCARCITY VALUE OF STICKY FACTORS.

The scarcity value of sticky factors may be threatened by substitution as well as by imitation: capacity in place may be displaced by newer and better capacity, customer preferences changed in ways that erode established customer bases and existing know-how improved on. The conceptual distinction between imitation and substitution as threats to scarcity value is that the former increases the supply of sticky factors while the latter effectively depresses the demand for them. Of course, this conceptual distinction is often less clear-cut in practice. For example, one could argue on and on about whether the later-but-better Marlboro brand imitated Viceroy and Winston in regular filters or substituted away from them. By implication, pure imitation and pure substitution should be regarded as the two ends of a spectrum of threats to scarcity value rather than as completely separate categories.

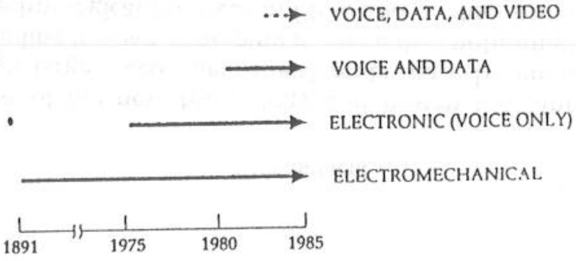
Despite this blurring at the boundaries, there are two respects in which substitution is less direct a threat to scarcity value than is imitation. First, substitution threats are less likely to be confined to direct competitors. Second, successful substitution involves finding a way around scarcity, not carrying out a direct attack on it. Such indirectness does not, however, take the sting out of substitution. In fact, some strategists have argued that substitution poses a more powerful threat to scarcity value than does imitation because indirect competition is more likely to be overlooked than direct competition, and harder to respond to once it is recognized. According to Porter (1985, p. 514), for instance, "The cardinal rule in offensive strategy is not to attack [the leader] head-on with an imitative strategy, regardless of the challenger's resources or staying power." Substitution is the approach Porter goes on to recommend for challengers who would attack the leader's early-mover advantages.

Substitution threats depend on environmental changes that create enough of a mismatch between precommitted factors and market opportunities to override early-mover advantages. While such changes can take a variety of forms, changes in technology, in demand and in the availability or prices of inputs seem, in that order, to be the most significant gateways to successful substitution. Note the implication that substitution threats are likely to be most frequent in technology-intensive, fashion-intensive and other *creative* industries in which the salient sticky factors have short half-lives, i.e., are obsolesced relatively rapidly. The computer industry highlights this threat: several participants do not even entertain ideas for fundamental product innovation unless they promise at least a tenfold improvement over the products on the market for which they are supposed to substitute. A product embodying a two- or threefold improvement in performance would probably be obsolete by the time it was introduced.

Organizations can sometimes thwart substitution threats through extra investment aimed at either defending the scarcity value of precommitted factors or replacing them in a manner responsive to environmental changes. *Renewal* of this sort has been much applauded of late. What its advocates tend to gloss over is that while relentless investment may increase earnings, it will not add value unless it is cost-effective. The threat of substitution (or of imitation) is neither immediate nor automatic, and deflecting it can be very costly. Under at least some circumstances, therefore, it must make sense to harvest rather than renew, to take the money and run. Corroboration comes from Caves, Fortunato, and Ghemawat's (1984) research on 42 "trusts" that dominated U.S. manufacturing at the turn of the century. The initial market shares of these trusts, which had been created through horizontal merger, averaged 69% and seemed substantially in excess of the levels required for them to operate efficiently. Over the next 24 years, these market shares declined significantly to an average of 45%. Their joint evolution with profit rates can be explained in terms of the optimal harvesting pattern implied by economic theory, suggesting that the trusts maximized their respective values by gradually yielding share instead of defending it against all comers.

For a contemporary example, consider the pattern of technological competition in the private branch exchange (PBX) industry. PBXs are switches located on customer premises to concentrate phone calls to central exchanges. Exhibit 5.4 summarizes their evolution through the early 1980s.[7] The first automated switch of this sort was patented in 1891 by Almon Strowger, a Kansas City undertaker, who is alleged to have been convinced that when customers tried to reach him, an operator rerouted their calls to her (the operator's) husband's funeral parlor. Strowger's first-generation electromechanical design, which established a dedicated path through the switching matrix for the duration of the call, dominated the PBX market for the next eight decades. The 1970s saw the introduction of second-generation electronic PBXs that used computer technology to interweave up to 125 conversations on the same line by sampling each of them 8,000 times a second. Second-generation PBXs continued, however, to be "voice only": they lacked the speed and capacity to transmit data as effectively as leading-edge buyers were coming to prefer. Third-generation "voice-and-data" PBXs that avoided these problems did not become available until the early 1980s.

Exhibit 5.4 The Evolution of PBX Technology



What is of primary interest about the PBX example is the fact that competitors that led in established technologies were slow to adopt new ones. AT&T, which had dominated electromechanical PBXs, trailed badly in the move to electronic PBXs. Rolm and Northern Telecom, which established substantial market presences on the basis of their second-generation voice-only PBXs, did not attempt to lead in the development of third-generation voice-and-data products: fringe players and entrants took on that role. And the successful voice-and-data pioneer, InteCom, displayed no interest in developing even newer PBXs with enough transmission capacity to handle video images as well as voice and data. To understand why technological leadership changed hands so often in the PBX industry, it is necessary to understand the nature of the substitution threat posed by later generations of technology to the sticky factors that had proved critical to competing effectively in earlier generations.

In the days of first-generation PBXs, the ability to achieve mechanical reliability had been critical. With electronic PBXs, high reliability could be achieved by using off-the-shelf components and building in redundancy. As a result, the ability to design software became critical. Successful software design remained an art, however: cumulated spending on it increased the likelihood of eventual success but did not guarantee it. To take just one example, IBM probably spent over $100 million in a failed attempt to develop a large, third-generation PBX; InteCom, in contrast, succeeded with less than $5 million in development expenditures.

With that background, it becomes easier to understand why PBX competitors made the choices that they did. The shift to electronic PBXs reduced the scarcity value of AT&T's ability, developed over several decades, to make extremely reliable electromechanical PBXs. While AT&T could still have moved aggressively into second-generation PBXs, its analysis indicated that this would increase customers' awareness of the new technology and hasten the cannibalization of its own large electromechanical rental base by enough to hurt its bottom line instead of helping it. Since the continuing opportunities for technological progress in PBXs and its discontinuous nature meant that AT&T could reenter the race later, it softpeddled electronic PBXs and concentrated on harvesting its electromechanical rental base.

Similarly, the successful second-generation competitors did not expect to have a big advantage at developing the next generation of PBXs. For that reason, and since they already had their hands full replacing the installed base of older electromechanical PBXs, they decided to leave third-generation demand to others, at least until that segment expanded significantly. Rolm, in particular, ploughed most of its profits into building up a network of marketing subsidiaries that were meant to allow it to defend its presence in PBXs in spite of continued technological progress by its competitors.

Finally, the successful voice-and-data pioneer, InteCom, did not attempt to make the next technological leap, to voice, data-and-video PBXs. That was because its founders sensed that that would be akin to betting what they had already achieved on their ability to hit consecutive home runs. Instead, InteCom's founders concentrated from the very beginning on skimming the market. While that strategy ultimately proved to be unsustainable, they laughed all the way to the bank, having recouped somewhere between ten and one hundred times their initial investment.

In summary, the PBX example reinforces the three principal messages of this section. First, the threat of substitution is a significant threat to the scarcity value of sticky factors. Second, this sort of threat is most likely to manifest itself against the backdrop of technological change. Third, while the threat of substitution can be combated by continuously upgrading or otherwise renewing the organization's stocks of sticky factors, such a policy is only likely to make sense when environmental change is cumulative in its effects. Changes that are expected to be discontinuous, in the sense of leveling initial differences in competitive position tend, in contrast, to make such a policy inadvisable.

HOLDUP THREATENS TO DIVERT SCARCITY VALUE.

Even if the scarcity value of sticky factors can be preserved from imitation and substitution, the ability of the owners of the organization to appropriate the proceeds cannot be taken for granted. The possibility of expropriation is a consequence of the gap between ownership and control: there typically is such a gap, and it typically leaves room for self-serving behavior by nonowners. Such behavior can reduce either the owners' share of total scarcity value (holdup) or the total amount of scarcity value available to be divided among them and nonowners (slack), or both. The diversionary threat of holdup will be discussed in this section, and the dissipative threat of slack in the next one.

Holdup of the scarcity value of sticky factors by nonowners is a threat only to the extent that nonowners control the flow of services from other *cospecialized* (complementary and specialized) factors. To fix ideas, suppose that the owners control sticky factor A but not cospecialized factor B. Then, from the owners' perspective, the potential scope for holdup by those who *do* control the flow of services from factor B is simply the difference between the joint value of factors A and B and the sum of the values they can individually command (through redeployment) in the event of a failure to agree on terms for exploiting the complementarity. Note that factor B must be somewhat specialized as well as complementary to factor A to serve as the basis for holdup: if B were a totally general-purpose factor, the owners of the organization could costlessly redeploy away from it at the first hint of attempted holdup.

The extent of complementarity sets an upper limit on holdup; the lower limit is zero. The actual degree of holdup will vary between these broad limits in a way that depends on the influences listed below.

Contractual Arrangements. Owners can enter into contracts with nonowners who control cospecialized factors with a view to restricting the degree of holdup. Relatively comprehensive contracts that are cheap to enforce facilitate this purpose. However, totally comprehensive contracts enforceable at zero cost, the sorts of contracts that could theoretically eliminate holdup, are almost always impractical for reasons that include bounded rationality, uncertainty about the future and asymmetric information (Williamson 1975).

Dependence. Returning to the notation introduced above, there tends to be a significant difference between situations in which the value of factor A is more-or-less unilaterally dependent on the continued flow of services from factor B, and situations in which the dependence is bilateral. The degree of holdup tends to be higher in the former sorts of situations (when the owners of the firm are unilaterally dependent on nonowners) because such one-sidedness affords nonowners a more credible threat of defecting from the cooperative arrangement if their demands aren't met. While there are a host of measures owners can take to build up bilateral dependence, such as insisting that nonowners provide them with "hostages" (Williamson 1985), countermeasures are available to nonowners who would rather be able to hold up the owners than not.

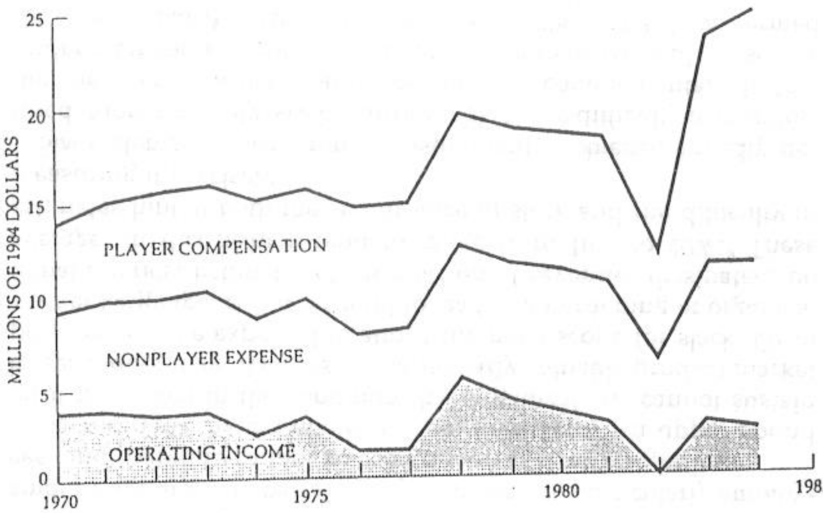
Norms. The actual degree of holdup is more than just a matter of calculating what one can get away with: it depends on norms about what is fair, the extent to which promises should be kept and so on. Societal norms about acceptable levels of profit and the tendency to settle on focal points (e.g., the tendency in bargains between individuals to split the difference between initial offers) can also be lumped into this category of influences on the division of joint gains. The precise influence of norms is highly sensitive to the specifics of the situation.

Posturing. An interest group's perceptions of the value to it of reaching an agreement with the groups that control complementary specialized factors usually aren't completely known to all of them. This incompleteness of information creates room for posturing, or bluffing. Owners can posture as if a degree of holdup close to zero is the most they are willing to concede. Nonowners can engage in posturing as well, however.

An example will help make this description more concrete. It concerns the holdup of the owners of National Football League (NFL) franchises in the 1970s and 1980s.[8] The NFL consists of independently owned franchises that have managed, for the most part, to function as a cartel on the basis of selective antitrust exemptions. Since 1970, the NFL has weathered threats of imitation by the World Football League (WFL) and the United States Football League (USFL), each of which operated less than three seasons. It has withstood substitution threats to sustain much higher broadcast ratings than any other sport. As a result, it managed to sign lucrative multiyear contracts with the three TV networks in 1978 and in 1982, contracts that increased the total revenue available to the average NFL team by 77% in *real* terms between 1970 and 1984 (see Exhibit 5.5). In spite of this winning record, however, the average team's operating income fell by a third between those years. Why?

Holdup by NFL players seems to have been the principal reason for this decrease. People of the size, skill and recklessness necessary to play professional football are obviously specialized resources. The essential complementarity of their services to the scarcity value

Exhibit 5.5 The Distribution of Revenues for the Average NFL Team



SOURCE: Porter (1986).

of football franchises has been evident from the inception of professional football: crowds of 70,000 people and more crowded into stadia as far back as the 1920s to watch stars such as Red Grange and Ernie Nevers.

Recognizing the resultant potential for holdup, the NFL evolved a number of practices to contain it. Players were signed to enforceable multiyear contracts that prespecified compensation levels. Arrangements were made to tilt the balance of mutual dependence in the owners' favor by keeping the players apart and the owners together: exclusive rights to draft rookies and restrictions on free agency by veterans increased the cost to individual players of not coming to terms; at the same time, revenue sharing among the owners blunted the incentives for them to engage in bidding wars for stars. The owners reacted to the formation of the NFL Players' Association (NFLPA) in 1956 by (a) studiously ignoring it; and (b) tripling salaries over the next decade in an effort that seems to have been designed, at least in part, to establish the norm that players would be treated fairly in individual bargaining. When demands for collective bargaining nevertheless proved irresistible, the owners cemented their own solidarity by requiring that any collective bargain be approved by at least three-quarters of them. The owners also adopted the posture of hanging tough when impasses occurred in the collective bargaining process, even at the risk of inducing strikes.

In spite of these measures, the NFL owners failed to prevent holdup by the players. Average player compensation climbed by more than 170% in real terms between 1970 and 1984. The players' share of total NFL revenues jumped from 35% to nearly 55%. The players captured, in effect, four-fifths of the increase in revenues per team over this period.

The reasons for this remarkable degree of holdup can be tied into the general influences on the degree of holdup identified earlier. The contracts signed by the players were obviously incomplete, given their limited duration. In fact, they *couldn't* have been made much more complete because of the constant churn of players in professional football and, more fundamentally, because it is impossible to contract for permanent ownership of (or more emotively, enslave) human capital. The various steps that the owners took to make their players more dependent on them were largely offset by the collectivization of bargaining (the NFLPA was certified as a union in 1971) and by the emergence, however short-lived, of alternative outlets for the players' services in the form of the WFL and the high-rolling USFL. The norms that the owners were trying to set for compensation levels failed to take hold with the players for a number of reasons: the average NFL career lasts less than five years; professional baseball and basketball players, who benefit from smaller rosters and less restrictive free-agency conditions, have tended to make almost twice as much per year as the average football player over a longer number of years; NFL franchises tend to have higher assessed values than other professional sports franchises. Finally, posturing by the owners did not work too well because, although they had more staying power than the players, they also stood to lose two to three times as much in absolute terms from strikes likely to follow posturing-related impasses. By the end of the 1980s, most NFL teams were reported to be losing money. They recently managed to secure another, even more lucrative TV contract, but it remains to be seen how much of the additional revenues will flow through to the bottom line.

In summary, the example of the NFL owners versus players reinforces the three principal messages of this section. First, holdup by those who control the flow of services from cospecialized factors is a significant threat to the ability of the owners of sticky factors to appropriate their scarcity value. Second, the degree of holdup is influenced by prevailing contractual arrangements, patterns of dependence, norms and posturing possibilities. Finally, while owners can pull on some or all of these levers to try to increase appropriability, at least some countermeasures are usually available to the would-be perpetrators of holdup.

SLACK THREATENS TO DISSIPATE SCARCITY VALUE.

Slack is the final threat to sustainability that must be taken into account. Slack measures the extent to which the scarcity value realized by the organization falls short of the amount potentially available to it. The conceptual distinction between slack and holdup is that the former shrinks the total size of the pie available to owners and nonowners while the latter shrinks the owners' slice of that pie. These dissipative and diversionary threats to the appropriability of scarcity value sometimes blend into each other in practice. For one thing, moves aimed at influencing the division of joint gains, such as posturing, can shrink the total amount of value available to be divided among owners and nonowners. For another, a certain amount of slack may be valued by nonowners, particularly employees, and therefore cannot be categorized as deadweight loss.

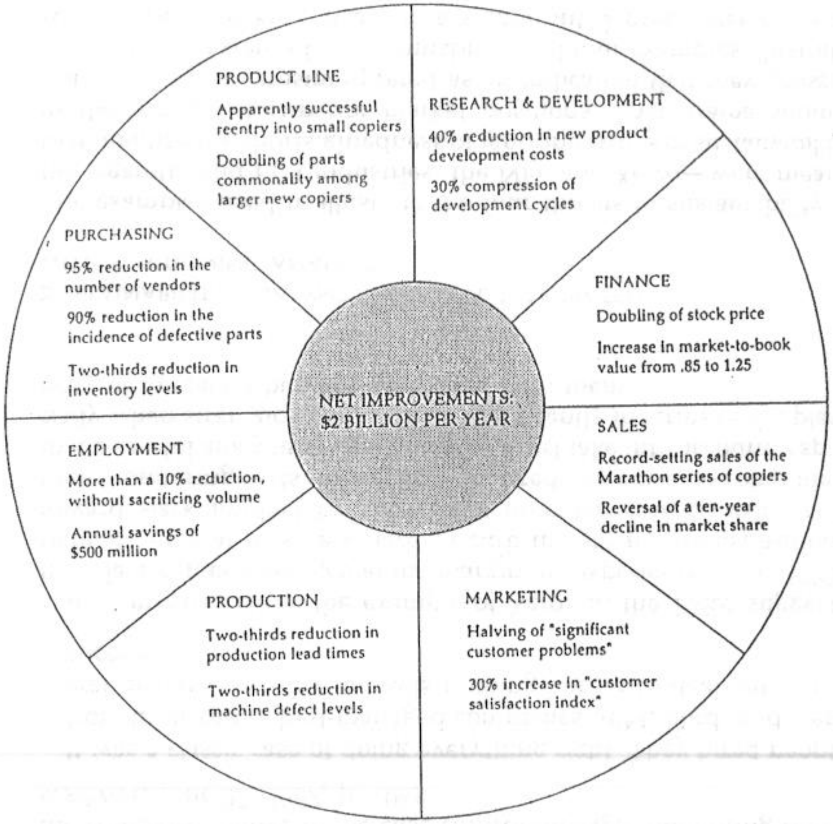
Slack cannot, by definition, be less than zero. An upper bound on it is implicit in the condition that organizations cannot sustain losses indefinitely. As a result, particularly valuable product market positions can be expected to afford the most scope for slack. Or in plainer language, rich diets tend to lead to a hardening of organizational arteries. Estimates of the fraction of revenues dissipated, on average, in this fashion tend to range from 10% to 40%.[9] These estimates hint at both the significance of slack and the difficulty of measuring it precisely.

Slack stems, in fact, from measurement problems, broadly defined. More precisely, slack is attributable to the difficulty of monitoring the uses to which nonowners put the complementary factors under their control. Such difficulties are apt to be particularly severe for factors that Alchian and Woodward (1988, p. 69) have termed *plastic:* factors in regard to which "there is a wide range of discretionary, legitimate decisions within which the user may choose." Plasticity is a prominent feature of creative industries of the sort discussed in the section on substitution threats. It should also be pointed out that factors that are vulnerable to holdup can be quite implastic, containing the threat of slack. Alumina refining provides an example. An alumina refinery is typically cospecialized to particular inputs and therefore vulnerable to holdup by, say, the local government imposing a bauxite levy or hiking power prices. It is far less vulnerable to slack, however, because its operating technology implies that it must be run close to flat out. (The only real alternative, shutting it down, isn't usually likely to further the interests of the nonowners who get to influence that call.)

The example of the alumina refinery is, of course, rather special in that plasticity, and the slack it leads to, is usually less predetermined and more something to be managed. It is easy to see why there is room for creativity in this regard. Slack is the by-product of a misalignment of owners' and nonowners' interests. If only a more perfect union could be effected between them, that would make things better all around by increasing the total size of the pie. The rash of recent writings on how to do so can be boiled down to three recommendations: gather more information, use that information to offer nonowners incentives, of both the stick and the carrot variety, that are more compatible with owners' interests and employ moral suasion as well since nonowners tend to be motivated by more than just the prospects of pain or gain. All of this is fine as far as it goes. What usually goes unsaid in the how-to literature, however, is that such devices cannot wipe out slack because of information-gathering costs, limits to the ability of organizations to offer high-powered (market-like) incentives and the incomplete efficacy of moral suasion.[10] Slack has to be managed and minimized, but it has its own logic, and is therefore impossible to eliminate. The analysis must take it into account, particularly when strategic options differ significantly in the degree of slack they are likely to induce.

Once again, the analysis of a case will help illustrate this particular threat to sustainability. The case concerns Xerox in the copier business over roughly the last two decades. The information assembled (from public sources) in Exhibit 5.6 indicates that the 1980s have marked a, period of substantial turnaround for the company. Its managers seem to have achieved these improvements largely on the basis of the devices described earlier. They compared Xerox to its Japanese competitors and to "best-practice" companies in other industries. They used the information gleaned from such benchmarking to establish targets for improvement and incentives to

Exhibit 5.6 Xerox's Copier Business in the 1980s


PRODUCT LINE
Apparently successful reentry into small copiers
Doubling of parts commonality among larger new copiers
RESEARCH & DEVELOPMENT
40% reduction in new product development costs
30% compression of development cycles
PURCHASING
95% reduction in the number of vendors
90% reduction in the incidence of defective parts
Two-thirds reduction in inventory levels
FINANCE
Doubling of stock price
Increase in market-to-book value from .85 to 1.25
NET IMPROVEMENTS: $2 BILLION PER YEAR
SALES
Record-setting sales of the Marathon series of copiers
Reversal of a ten-year decline in market share
EMPLOYMENT
More than a 10% reduction, without sacrificing volume
Annual savings of $500 million
PRODUCTION
Two-thirds reduction in production lead times
Two-thirds reduction in machine defect levels
MARKETING
Halving of "significant customer problems"
30% increase in "customer satisfaction index"

achieve them. And they reinforced these incentives by trying to create an organizational culture that emphasized quality, responsiveness and other good things. While Xerox still has a long way to go, its top managers deserve to be congratulated for the progress they have made in repositioning the company since 1980.

It is also clear, however, that Xerox could not have wrung such significant improvements out of its copier business in the 1980s unless it had accumulated stupendous amounts of slack there in the 1970s. Xerox's own statements about the savings achieved in the 1980s as well as other estimates (e.g., Bresnahan 1986, p. 59) suggest that by the late 1970s, slack was dissipating at least 20%

of the company's sales revenues. If this figure were applied just to the second half of the 1970s (and slack implicitly assumed to be zero in the first half), it would suggest total slack of about $5 billion over those five years, an amount greater than the operating income Xerox recorded over that period. While these are *very* soft numbers, their suggestion that Xerox squandered much of its birthright in the 1970s is strongly borne out by what happened to its shareholders during the 1970s and early 1980s. According to a study by Ball (1987), Xerox ranked last among the 50 largest mature U.S. companies in terms of the fraction of its income that actually translated into incremental shareholder value. Thus, the ratio of shareholder enrichment to retained earnings over the 1970s and early 1980s was −220% for Xerox, compared to an average of +84% for Ball's entire sample!

This dismal performance can readily be linked to the framework for thinking about slack that was presented earlier. I shall simply sketch the analysis. There was a lot of potential for slack at Xerox in the 1970s because it started out with a monopoly on a booming market (the Xerox 914 had proved to be the single most profitable product in U.S. history), a stranglehold on plain-paper copying technology that would sustain its uniqueness for at least a few more years, and a few additional years of implementation lags before any imitators/substitutors that found a way around Xerox's thicket of patents could make themselves felt in the market place. There were several reasons why much of this potential for slack became reality. The plasticity of the factors Xerox deployed in the copier business, as indicated by its innovation-intensity and the 5-to-1 ratio of support staff to assembly-line workers, made it hard to monitor. Monitoring was further complicated by incomplete information about such things as segment sizes, shares and relative cost positions, and by higgledy-piggledy growth (the number of Xerox employees increased from 3,000 in 1963 to 60,000 in 1970, and came close to doubling again in the next decade). That the growth was faster than had been anticipated and that numerous lawsuits were launched threatening Xerox with dismemberment exacerbated the challenge confronting its managers.

Some readers may still be inclined to ascribe the stupendous amount of slack at Xerox in the 1970s to the ineptitude of its top management instead of the informational complexity of the situation that they faced. In particular, Peter McCulough, whose tenure as Xerox's CEO coincides with some of the darkest days for the company's copier business, has been pilloried for introducing a matrixed organizational structure that ultimately proved to be so unwieldy that it had to be abandoned. This seems more than just a tad unfair. The powers that were at Xerox, including McCulough's predecessor, Joseph Wilson, were convinced by the second half of the 1960s that the company's operations were outstripping its ability to control them, and that much more elaborate controls were needed to prevent them from flaming out like a gigantic Roman candle.[11] Tom Peters, who worked on one of McKinsey's many consulting studies for Xerox toward the end of McCulough's tenure, has this to say about the company's move to increase control-through-monitoring (*BusinessWeek*, June 22, 1987, p. 106):

> It was a classic case of doing everything right. They hired people from three of the best-managed companies, IBM, Ford, and General Electric. . . . But there is nothing harder to deal with than success.

In summary, while the example of Xerox in the 1980s suggests that slack can be managed at the margin, its experience in the 1970s reminds us that it is very hard to curb the strong predispositions toward slack implied by substantial potential scarcity value and high monitoring costs. By implication, irreducible slack is something that a careful analysis of sustainability must take into account, especially when strategic options differ significantly in terms of the plasticity of the factor bundles associated with them.

SUSTAINABILITY ANALYSIS SHOULD BE INTEGRATED WITH POSITIONING ANALYSIS.

The examples used to illustrate the four threats to sustainability—the cigarette and PBX industries, the NFL and Xerox—were meant to dramatize the shortsightedness of ignoring issues of sustainability in the pursuit of superior market positions. That drama should not, however, be misinterpreted as an indication that they grossly overstate the extent of unsustainability. All four examples illustrate scarcity value leaking away, to a significant degree, over a 10- to 20-year period. This pattern is consistent with the evidence presented at the beginning of this chapter on the rapid convergence of profit rates toward average levels.

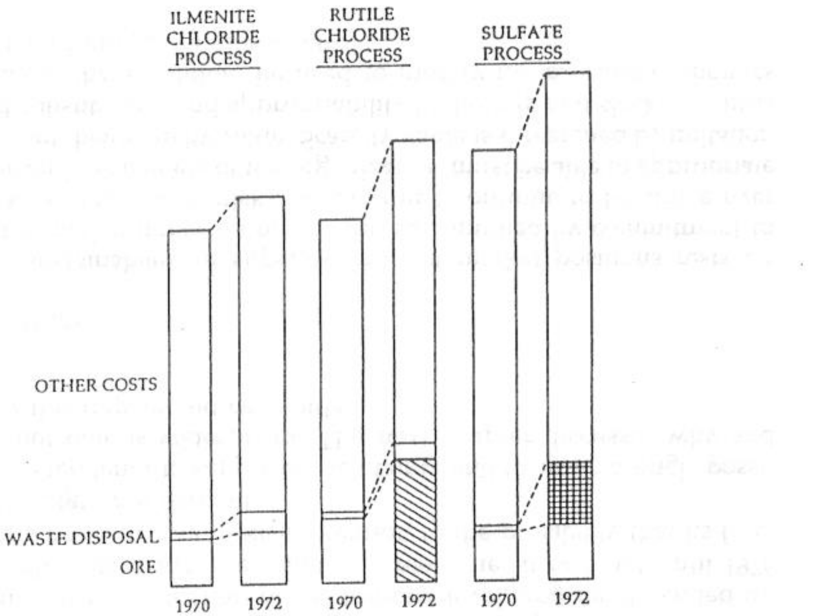
The implication, clearly, is that it is important to think through sustainability ahead of time instead of taking it for granted. Sustainability is not, however, the Holy Grail: claiming such an exalted status for it would contradict chapter 1's lesson that there are no generic success factors. More analytically, a focus on sustainability at the expense of the positioning considerations that were discussed in the last chapter would unduly devalue "hit-and-run" strategies of the sort successfully practiced by InteCom. And a focus on sustainability at the expense of the considerations of flexibility that are discussed in the next chapter would unduly favor committing sooner rather than later.

By implication, sustainability analysis should be integrated with the other sorts of analysis discussed in this book. The analysis that led Du Pont to preempt expansion opportunities in the U.S. market for titanium dioxide in the 1970s will help illustrate the sort of integration that is required.[12] Titanium dioxide is a commodity chemical used as a whitener in paints, plastics and paper. It can be manufactured with batch-process sulfate technology that uses low-grade ilmenite ore or continuous-process chloride technology configured to handle either ilmenite or higher-grade rutile ore. In 1970, the two chloride processes were at cost parity with each other but enjoyed an advantage over the older sulfate process.

Environmental shifts in 1970 and 1971 drastically altered the cost positions of the three titanium dioxide production processes (see Exhibit 5.7). In Australia, restrictions were imposed on the mining of rutile from beach sands, forcing up its price by more than 70%. And in the United States, more stringent emissions standards increased waste disposal costs, particularly for the sulfate process, which was the dirtiest of the three.

Du Pont was the only competitor that had learned how to operate the chloride process with low-grade ilmenite ore. It now found itself blessed with a very sizeable cost advantage. Additionally, this advantage looked very sustainable. Mastery of the ilmenite chloride process was a black art: it could be achieved only by investing $50 million to $100 million and several years in testing an efficiently scaled plant. Du Pont expected that the cost and risk of this alternative would keep its competitors from imitating its demonstrably superior technology. Substitution did not seem to be much of a threat either. Although a way of enriching ilmenite into a feedstock suitable for the rutile chloride process might be developed, it would not be able to match the economics of Du Pont's ilmenite chloride process. While there might be some holdup by

Exhibit 5.7 Standard Costs of 50,000-Ton Titanium Dioxide Plants*



*Plants are assumed to operate at capacity, which is possible only after several years of "shake down."

SOURCE: Ghemawat (1984)

suppliers of labor and ilmenite ore, neither of these factors was cospecialized enough to Du Pont's proprietary know-how to appropriate much of its scarcity value. Finally, once this know-how was embodied in capacity, it became relatively implastic, limiting the threat of slack.

Based on positioning and sustainability analysis, Du Pont decided, in 1972, to invest more than $200 million to add 200,000 tons of capacity at a new site to preempt all the growth in U.S. demand forecast through 1985. This capacity was to be added in the form of two 100,000-ton lines. Du Pont expected that completion of the second line would raise its market share to a commanding 65%.

By 1975, however, faltering demand forced Du Pont to defer the construction of the second of the two planned lines indefinitely.

Because of corporate capital constraints and differential inflation rates that had reduced the cost advantage of new ilmenite chloride capacity, reservations also began to surface about the first line, on which $10 million had already been spent. Key managers at Du Pont's Pigments Department spent five months simulating the discounted cash flows implied by two alternate strategies: "growth," which involved adding the first line at the new site for a target 1985 market share of 55%, and "maintain," which did not.

Naive positioning analysis favored the maintain strategy for discount rates greater than 13% because the extra capacity implied by the growth strategy would not be needed immediately. The relevant cost of capital was almost certainly greater than this break-even discount rate because the data plugged into the cash flow analysis were nominal rather than deflated (at a time when inflation was running at about 10%), and because Du Pont had just imposed capital rationing on itself in order to preserve its AAA bond rating. By implication, naive positioning analysis would have suggested abandoning the effort to preempt the U.S. market.

Du Pont's managers recognized, however, that its choice between the growth and maintain strategies would influence the actions of its competitors. According to an internal Du Pont memorandum, if it did not increase its share of the expanding market, "Competitive expansion and the resulting scramble for sales will affect price. . . . Du Pont would then no longer be an industry leader and would be facing the prospect of competing on a 'me-too' basis." The growth strategy was likely to enhance sustainability by denying competitors the opportunity to add efficiently scaled new capacity and learn how to operate it. Du Pont reckoned that by keeping competitors' costs high, the growth strategy would permit long-run prices 3% higher than could be expected of the maintain strategy. When this differential was factored into the analysis, the break-even discount rate for picking the growth strategy over the maintain strategy increased from 13% to 20%. Du Pont decided to go ahead and preempt. Fifteen years later, it is still the only operator of the ilmenite chloride technology. It is also in the midst of a ten-year program to double its capacity at home and abroad that has already made it the largest producer of titanium dioxide worldwide.

This account has focused, so far, on Du Pont's calculation of the value of doing one thing as opposed to another. What lay behind the numbers? Du Pont apparently understood that the (potentially) scarce sticky factor it had going for it was its knowledge about how to operate the chloride process with low-grade ore and took actions to preserve that (intangible) factor's scarcity value. These included not only the preemptive addition of capacity but also the complementary actions of acquiring additional supplies of low-grade ore, not licensing proprietary technology, keeping prices low in the short run and otherwise signaling the aggressiveness of its expansion plans. By implication, advance consideration of sustainability can facilitate not only the selection of the right course of action but also its implementation.

Du Pont obviously deserves considerable credit for the analysis that it performed. The one thing it can be faulted for, however, is its initial failure to take uncertainty seriously. For instance, aggregate demand for titanium dioxide could be expected to have a significant influence on the profitability of the capacity Du Pont planned to add, given the price-inelasticity of the former and the capital-intensity of the latter. Yet Du Pont worked with single-point forecasts of demand through 1975. It was taken by surprise when demand that year fell 25% short of the forecast level, and nearly ended up canceling its plans to expand at a new site. It was not until 1976 that it began to pay explicit attention to the possibility that its forecasts might not pan out.

The tendency to suppress uncertainty and focus on a single possible outcome is widespread. The next chapter discusses why and how this trap should be avoided.

SUMMARY

The sustainability of superior product market positions rests on factor market imperfections of the sort implied by commitment to sticky factors. Such sticky factors must continue to be scarce over time and the owners of the organization must be able to appropriate some of their scarcity value. Scarcity value is threatened by imitation and substitution, and appropriability by holdup and slack. Analysis of these threats should be used to modify the baseline economics derived from positioning analysis.

ROGERS'S DIFFUSION OF INNOVATION FORECASTING

Applications

- Projecting adoption and use of a novel product or service.
- Structuring analysis of consumer attitudes for surveys of high-tech markets and potential markets.

Procedures

1. Develop a model of the evolution of consumer attitude toward your new product or service.
2. Test the model through focus-group research and usage surveys.
3. Use the model to project sales and map the product life cycle.

Cross-Reference

Product Development and Innovation.

High-tech companies frequently prepare revenue projections for products that do not yet exist. This is a difficult task, and the projections often prove wrong. Techniques from consumer-product research are not directly applicable to the problem, but market research can be used to improve projections if it is integrated into Rogers's model of adoption of innovation.

The model identifies a series of stages through which any consumer must go in the adoption process, then makes some assumptions about the rate at which different consumers go through this process. Use the model to help forecast adoption of any innovative new product, process, or service. It is helpful when deciding whether to fund an R&D project and also in setting marketing budgets and revenue projections for new products.

Some years ago I had the job of preparing revenue projections for the R&D proposals of a biotechnology company. Every day we would wrestle with the projections for another proposed product or process, and usually it came down to making our best guess. I trust executives will not be deceived by impressive graphs and tables—most market projections for new innovations are based on someone's best guess. Here is a method that helps refine the guesswork, at least ensuring that it will be in the ballpark in most cases. Insist on projections that address the rate and process of adoption if you want greater accuracy in new-product projections.

INSTRUCTIONS

1. Build a model of the adoption process.

The boiler-plate model hypothesizes that adopters must move through five stages:

1. *Awareness.* Has heard of it, but does not know much about it.
2. *Interest.* Thinks it might be good; looking for more information.
3. *Evaluation.* Considering the information to see whether it is worth pursuing.
4. *Trial.* Experiments with it to see whether it will work out.
5. *Adoption.* Likes it and decides to use it regularly.

This model is generally applicable, even to the diffusion of new ideas, but for some products additional stages may be necessary. For example, trial can be a lengthy, multistep process for a major new process-technology.

After defining the stages, identify the obstacles to adoption that are likely to arise at each stage. Start by thinking about the innovation and the target market and try to hypothesize what the obstacles will be. For example, if a new banking service requires access to a

WHARTON REPROGRAPHICS

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personal computer and modem, then acquisition of this equipment will be an obstacle in the movement from interest to evaluation.

Now form one more set of hypotheses—these concerning the rate at which people in the target market will move through the adoption process. Are there many obstacles? Then the rate will be slow. Are the majority of consumers in this market innovators and eager to adopt any hot new product? Then the average rate will be fast, and a high percentage will adopt the innovation early. Are some resistant to changes in the way they work and thus unlikely to adopt innovations that might change their work? Then they will lag well behind the early innovators.

The theory holds that consumers fall into multiple groups based on how fast they move through the stages of adoption and that the distribution of adoption rates over time is statisically normal (a standard bell shape). Use this normal distribution as a boilerplate model of the rate at which different consumers will adopt the innovation and alter it based on any extenuating circumstances:

ADOPTION RATES AND GROUPS

Group	Percent of population	Formal definition
Innovators	2.5	$X - 2\sigma$
Early Majority	34.0	X to $X - \sigma$
Late Majority	34.0	X to $X + \sigma$
Laggards	16.0	$X + \sigma$

X = Average time of adoption of the innovation

σ = Standard deviation of the distribution of adoption over time

2. Test the model through primary research.

If the projection is important, it is worthwhile to go the extra mile and test your hypotheses concerning the adoption cycle and the rate of adoption (the latter includes estimates of the average time of adoption and the distribution of consumers around this mean).

Qualitative methods, such as focus groups, are generally most useful at the early stages of product development. Gather potential adopters, describe the innovation, and ask them what obstacles they see in adopting it. Ask them how long it would take them to adopt it. Show them your hypothetical models and see what they think. While people do not always predict their own behavior with accuracy, they probably can predict it better than you can, so their feedback should be helpful.

The easiest and best way to do focus-group research is to hire a firm or individual specializing in recruiting the members and facilitating the meetings. When amateurs try this as a money-saving measure, the focus groups rarely go well. If you do not want to spend $10 to 30,000 on professional focus-group research, the best alternative is to conduct in-depth, one-on-one interviews.

Primary or secondary research should also be directed toward identifying and profiling consumers based on the speed with which they adopt innovations. Who are the innovators and how do you reach them? Are they really only 2.5% of the population? (If this is true, then scale down the first year's revenue projections!) Who is the early majority and how is it reached?

3. Use the model as an aid to revenue projections.

Steps 1 and 2 produce a fairly detailed model of the adoption process and provide a basic understanding of the demographics of adoption. Use the adoption process model to anticipate how long, on average, it will take the consumer to move through each stage. Use the demographic information to project how many will move through the adoption cycle at any specific time ahead of or behind the average.

Lay these projections over the typical data on projected market share. (It is important to project what the potential market is and what percent of it your marketing will capture, just as you would in a standard revenue projection.)

Example

You project a market of 100,000 consumers next year and expect that with a conventional product your firm's marketing effort could capture 20% of them as customers. Since you are introducing an innovation, your analysis also indicates that the average adoption time will be three years and that the "innovators," 2.5%, will be the only ones to adopt it in the first year. A conservative projection would therefore be 2.5% of the 20% share figure, or only 500 consumers who will adopt your innovation in the first year.

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STRATEGIC PLANNING INSTITUTE QUALITY ANALYSIS

Applications

- Ranking the product line of a business unit and its competitors on the basis of overall quality.
- Measuring quality for use in business-unit value maps.
- Developing quality-based positioning strategies for business units and product lines.

Procedures

1. Select a team of managers and staff to identify key product attributes affecting customer purchase decisions for a product line.
2. Weight each attribute by its importance to the purchase decisions of customers.
3. Rate each business unit's product line (yours and your competitors') by its relative quality on each attribute.
4. Verify managers' perceptions with market research if possible.
5. Multiply importance scores by quality scores and sum to create an overall quality score for each product line.
6. *Optional.* Rank business units on the basis of relative price, then plot quality and price on a value map.

Cross-Reference

Strategic Planning Decision.

The Strategic Planning Institute, a nonprofit consulting group that maintains the PIMS (profit impact of market strategy) database started at Harvard Business School, uses a simple method to assess product quality. Quality is an important variable in

Harvard Business School

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WHARTON REPROGRAPHICS

DMA, Inc.

"Every one loves this software package," said Lee Rautenberg, president of DMA, Inc., in January 1988 as he introduced *PC MacTerm*, the company's latest product to visitors. Lee continued, pointing to the two personal computers in front of him, "As you see, the Mac is running Lotus 1-2-3 directly from the hard disk of the IBM PC. All you need to achieve this feat is *PC MacTerm*, *pcAnywhereIII*, and a $15.00 serial cable. Nothing else.

"Developing software is what we are good at," Rautenberg added. "Now we must decide on a marketing strategy. And the most important decision is whether to market the product ourselves or to go with a publisher."

Background

Dynamic Microprocessor Associates (DMA) was founded in 1979 by Rautenberg to develop software for the emerging microcomputer industry. By 1988, the company had grown to twelve people, divided between a technical development group in Long Island and a sales and marketing group in New York. Projected sales for the year were approximately $4.2 million. (See **Exhibits** 1 and 2 for DMA's latest income statement and balance sheet.)

Since its founding, DMA had produced eight software packages for a variety of computer systems. Three of these packages had been selected by PC Magazine for the "Editor's Choice." The company prided itself on the technical excellence of its products.

DMA's best-selling product was *pcAnywhereIII*, which allowed an IBM personal computer (IBM PC) to access another IBM PC via a modem and a telephone line. *PC MacTerm*, the company's latest offering, enabled an Apple Macintosh computer (Mac) to operate an IBM PC with equal ease. Early reactions from critics indicated that *PC MacTerm* was set to win wide acceptance.

The estimated installed base of personal computers in U.S. businesses (i.e., excluding households and educational establishments) in 1987 was 15.12 million units, and was expected to grow at 11% per annum for the next five years. These personal computers were based on many hardware standards, the two most common being the IBM PC and the Apple Macintosh.

Najib Hashem prepared this case under the supervision of Professor Anirudh Dhebar as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. Some data has been disguised.

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The IBM PC and the Mac differed in many ways. The most striking difference involved the Mac's interface, which relied heavily on the use of icons and a "mouse"; the Mac also operated in a "what you see is what you get," or WYSIWYG, mode: text and graphics appeared on the screen exactly as they would on paper. The IBM PC and the Mac differed in their internal architecture as well. For example, they were designed around different microprocessors (Intel for the IBM PC and Motorola for the Mac), they relied on different protocols and connectors to send data to printers and other devices, and they saved data on diskettes in different formats. These and other differences made the two standards incompatible with one another.

The IBM PC was the accepted business standard. IBM PCs and compatibles held over 75% of the installed base in offices (*vs.* 5% for the Mac). It was generally accepted that the Mac was the more user-friendly machine, and the number of Mac users was growing.

Connectivity--the ability to link computers together for the purpose of sharing information--was a major problem in dealing with systems from more than one vendor. There were three levels of connectivity: (1) limited ability to exchange data files, (2) added capability to run programs, and (3) full connectivity to a host computer with unlimited access to hardware, files, programs, and peripherals (e.g., printers). *pcAnywhereIII* provided the third level of connectivity between IBM computers. *PC MacTerm* promised the same between an IBM PC and a Mac by allowing the Mac to control the IBM. "Given the increasing popularity of the Mac, such a product was waiting to be developed," said Brad Farkas, the creator of *PC MacTerm.*

The Market for *PC MacTerm*

PC MacTerm was created for the 300,000 or so customers who used both an IBM PC and a Mac. Rautenberg was unsure about the proportion of this market that *PC MacTerm* might capture: companies with mixed computer environments had managed with only limited connectivity for quite some time, and, in any case, most individuals used one system or the other, but not both. Would they appreciate the added flexibility that *PC MacTerm* offered? Experts and critics who had tried *PC MacTerm* thought it a very useful product. Would corporate customers react the same way? Rautenberg was also uncertain about the size of the market itself. The number "300,000" was just an estimate. The true number could range anywhere between 200,000 and 1,000,000.

One of Rautenberg's other worries was the emergence of a competitive product. Many software and hardware firms were working on connectivity issues, and could introduce a more effective or cheaper product. Even if a competitor did not emerge, Rautenberg estimated that product obsolescence in the fast-paced computer industry would limit *PC MacTerm*'s life expectancy to at most four years. After that, either a competitive product (possibly developed by DMA) would become available, or, conceivably, hardware manufacturers might themselves devise methods to overcome the connectivity problem altogether, thus eliminating software solutions.

Marketing

Rautenberg had budgeted $200,000 for a marketing campaign to launch *PC MacTerm.* Much of that money would be spent up-front to generate consumer excitement and raise awareness. He realized, however, that advertising alone would not be enough. Dealers would have to be educated about the benefits of *PC MacTerm*. This would not be easy. Most dealers specialized in either IBM or Apple products, and even those who carried both systems tended to locate them in different parts of their showrooms. In spite of a fairly aggressive marketing plan, Rautenberg was not very optimistic about the market share that *PC MacTerm* could capture in the first and subsequent years. He estimated that market share in the first year could range anywhere from 2% to 5% of the potential market; the share in subsequent years would be a direct function of how well the product sold in the previous period.

The retail price for *PC MacTerm* was to be set at $99, a little lower than the price of many specialist data exchange programs, and comparing favorably with the company's $145 *pcAnywhereIII*. Both *PC MacTerm* and *pcAnywhereIII* would be required to connect an IBM PC with a Mac. Wholesalers typically paid half the retail price. In this case, they would purchase the product from DMA for $50. The company would incur $6 per copy of *PC MacTerm* for program disks, printing manuals, and packaging. A specialist subcontractor would perform these manufacturing operations. Product support would be offered using DMA's existing marketing and program development staff. **Exhibit** 3 gives the proposed advertising copy for the new product.

The Catalina Deal

DMA intended to market the new software on its own. Just before the company went to market, however, it was approached by Catalina Computing,[1] a $30-million firm specializing in the development and marketing of a line of network communication utilities. Catalina proposed to acquire exclusive marketing rights for *PC MacTerm* and sell the software under its own brand name. In return, DMA would receive a signing bonus of $50,000 plus a royalty of 15% of gross sales (based on $50/unit). Most software publishing contracts also included commitments to spend a minimum number of advertising dollars. This was not possible in the case of *PC MacTerm*: because Catalina planned to combine it with its own product line, it would be difficult to identify the proportion of advertising dollars spent on *PC MacTerm* as compared to the whole line. Therefore, Catalina had proposed minimum royalty payments of $15,000 per month for the first six months, followed by minimum payments of $10,000 per month for up to two years. The minimum payments were an incentive for Catalina to exercise "due diligence" in the promotion of *PC MacTerm*.

Catalina was a large and established distributor of Mac software and had good name recognition among Mac users. Rautenberg knew Catalina could secure many more outlets and generate far better sales than DMA. Still, was 15% a reasonable royalty rate? Would Catalina be equally affected by the entry of a competitive product? Were there other benefits to turning over the marketing of a DMA product to a company with an established presence in the Mac software market?

Perhaps he was wrong to think simply in financial terms. DMA was a developer of IBM PC software and relatively unknown in the Mac community. The association with Catalina would give the company a valuable "stamp of approval." The Catalina deal would also free DMA from the task of marketing and supporting *PC MacTerm;* the company would be able to devote its scarce resources to what it did best–developing new software programs.

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[1] "Catalina Computing" is a disguised name.

Making a Decision

DMA's culture was strongly focused on product development, and Rautenberg was acutely aware that sales performance had suffered in the past as a result of the company's narrow technical focus. DMA needed to place greater emphasis on marketing if its products were to achieve their full potential. *PC MacTerm* appeared a winner by all accounts, which made the decision on how to sell it all the more difficult. Teaming up with a well-known software publisher would ensure wide distribution and ease the entrée into the Mac world; it would also be a valuable learning experience. On the other hand, if the product was a success, DMA would be forfeiting the chance to gain direct recognition and substantial monetary gain. Was *PC MacTerm* the right product to experiment with? Would there ever be a right product?

Rautenberg had prepared a chart listing his expectations about the market and his uncertainties surrounding many of the sales projections (see **Exhibit 4**).. He wanted to review the numbers and understand the financial implications before making a final decision.

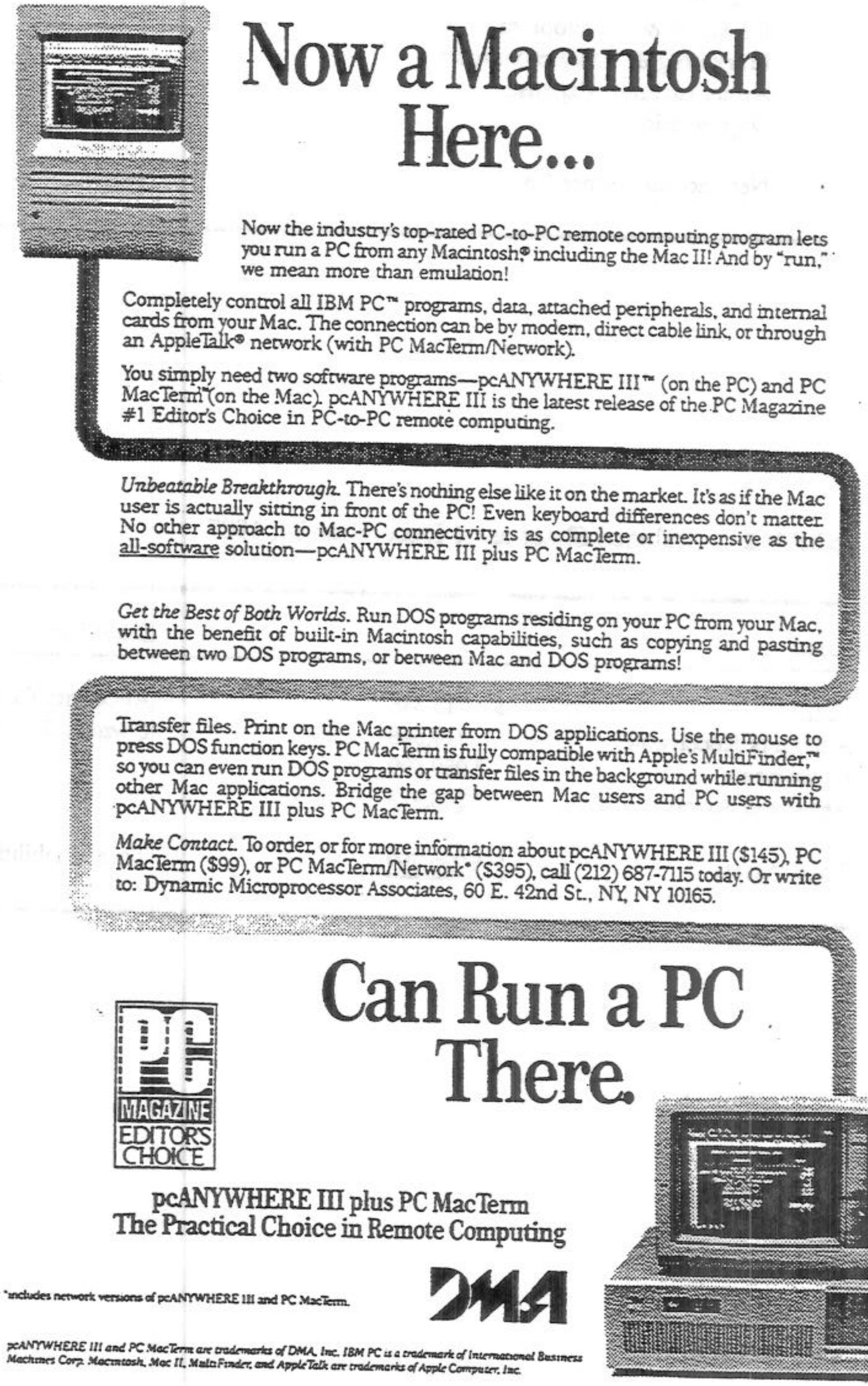
Exhibit 1 Income Statement for 1987

Sales	$ 3,692,130
Cost of Sales	184,774
Research & Development	558,524
Marketing & Product Support	534,078
Administration Expense	261,095
Depreciation	166,760
Net Income before Tax	$ 1,986,899

Exhibit 2 Balance Sheet as of December 31, 1987

Assets		*Liabilities*	
Cash	$ 215,848	Accounts Payable	$ 177,484
Accounts Receivable	719,348	Owners' Equity	5,058,315
Investments	2,059,690		
Net Fixed Assets	2,240,913		
Total Assets	$ 5,235,799	Total Liabilities	$ 5,235,799

Exhibit 3 Proposed Advertising Copy for *PC MacTerm*



Now a Macintosh Here...

Now the industry's top-rated PC-to-PC remote computing program lets you run a PC from any Macintosh® including the Mac II! And by "run," we mean more than emulation!

Completely control all IBM PC™ programs, data, attached peripherals, and internal cards from your Mac. The connection can be by modem, direct cable link, or through an AppleTalk® network (with PC MacTerm/Network).

You simply need two software programs—pcANYWHERE III™ (on the PC) and PC MacTerm™ (on the Mac). pcANYWHERE III is the latest release of the PC Magazine #1 Editor's Choice in PC-to-PC remote computing.

Unbeatable Breakthrough. There's nothing else like it on the market. It's as if the Mac user is actually sitting in front of the PC! Even keyboard differences don't matter. No other approach to Mac-PC connectivity is as complete or inexpensive as the all-software solution—pcANYWHERE III plus PC MacTerm.

Get the Best of Both Worlds. Run DOS programs residing on your PC from your Mac, with the benefit of built-in Macintosh capabilities, such as copying and pasting between two DOS programs, or between Mac and DOS programs!

Transfer files. Print on the Mac printer from DOS applications. Use the mouse to press DOS function keys. PC MacTerm is fully compatible with Apple's MultiFinder,™ so you can even run DOS programs or transfer files in the background while running other Mac applications. Bridge the gap between Mac users and PC users with pcANYWHERE III plus PC MacTerm.

Make Contact. To order, or for more information about pcANYWHERE III ($145), PC MacTerm ($99), or PC MacTerm/Network* ($395), call (212) 687-7115 today. Or write to: Dynamic Microprocessor Associates, 60 E. 42nd St., NY, NY 10165.

Can Run a PC There.

PC MAGAZINE EDITOR'S CHOICE

pcANYWHERE III plus PC MacTerm
The Practical Choice in Remote Computing

*includes network versions of pcANYWHERE III and PC MacTerm.

DMA

pcANYWHERE III and PC MacTerm are trademarks of DMA, Inc. IBM PC is a trademark of International Business Machines Corp. Macintosh, Mac II, MultiFinder, and AppleTalk are trademarks of Apple Computer, Inc.

Exhibit 4 Market Expectations for *PC MacTerm*

		Range	
Assumptions	*Best Guess*	*Low*	*High*
Market			
Initial market size (units)	300,000	200,000	1,000,000
Market growth rate	11%	8%	14%
Years to obsolescence	2	0	4
Distribution by DMA			
Promotion budget	$200,000		
Price to wholesalers	$50.00		
Variable costs[a]	$15.00	$12.00	$20.00
Initial market share	3.5%	2.0%	5.0%
Annual market share growth multiplier[b]	1.5	1.2	1.8
Distribution by Catalina			
Signing bonus	$50,000		
Royalty rate	15.00%		
Minimum yr 1	$150,000		
Minimum yr 2	$120,000		
Variable costs	None		
Initial market share	10.0%	5.0%	15.0%
Annual market share growth multiplier[b]	1.5	1.2	1.8

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[a] Variable costs included $6 for manufacturing and $9 for anticipated product support costs.

[b] If the share of the unsatisfied market is 10% in Year 1, an annual market share multiplier of 1.5 implies that share of the unsatisfied market in Year 2 will be 15% (= 10% * 1.5), in Year 3, 22.5%, etc.

WHARTON REPROGRAPHICS

Chapter 2

Choosing the Legal Form of the Business

The hardest thing in the world to understand is Income Tax.

— Albert Einstein

2.1 General Considerations

A business venture can generally be structured into one of three legal forms — the sole proprietorship, the partnership, or the corporation. There are also certain variations on some of these basic legal forms, such as the S corporation and the limited partnership. In addition, the limited liability company (LLC), a relatively new form of business organization, has gained legal status in all but two states. See Section 2.6 for more on LLCs. If you are planning to start a business, consider the following questions when deciding your business' legal form:

- Will someone else share in ownership of the business? If so, it will not be a sole proprietorship. The choice will be between a partnership arrangement and a corporation, or possibly an LLC.
- How important is it to limit personal liability for debts or claims against the business? If this is a major consideration, incorporating the business would generally be the best means of limiting your liability.
- Which form of business organization will result in the least taxes? While there is no universal answer to this question, the rest of this chapter explains when it is and isn't beneficial to incorporate for tax reasons.

Changing Legal Forms

Before choosing the legal form of your business, it is important to realize that you may need to change to a different form at some time in the future. Changing legal forms is easier to do with some forms of business than with others. As a broad generalization, it is usually a simpler matter to change from a sole proprietorship to a partnership, or to change from a sole proprietorship or partnership to a corporation, than it is to move in the opposite direction. An LLC is usually treated like a partnership.

For example, converting a corporation into a sole proprietorship or partnership may result in substantial individual and corporate-level taxes when the corporation is liquidated. This would occur if the value of the business, when transferred to the stockholders of the corporation, was greater than the cost or tax basis for their stock, resulting in taxable gains to the stockholders. If some of the corporate assets have value in excess of their tax basis, the corporation will also have taxable gains and will pay a corporate tax on such gains when it transfers the assets to its stockholders.

While there are almost always some expenses and complications in changing the legal form of a business, such changes are quite routine transactions. Many businesses start off as sole proprietorships, develop into partnerships, and later incorporate if tax and other considerations indicate that it no longer makes good business sense not to be incorporated. Thus, the choice of one legal form over another when starting a business should not be considered a final choice.

To get a brief overview of the various legal forms of doing business, refer to the summary table at the end of this chapter, which lists the key characteristics of sole proprietorships, partnerships, corporations, and limited liability companies.

2.2 Advantages and Disadvantages of Sole Proprietorships

A sole proprietorship is one of the most common ways in which to organize a new start up. For example, many self-employed individuals, home-based businesses, and small cottage industries operate as sole proprietorships. The list can go on, but generally, sole proprietorships are one- or two-person businesses. As a sole proprietor, you are the sole owner of your business. If married, however, your spouse will usually have a one-half interest in the business if you live in a state that has community property laws. It is an exciting, independent way to operate a business, and it has its own unique set of advantages and disadvantages.

Advantages

To give you a better perspective on why a sole proprietorship is a popular legal form of doing business, consider the benefits listed below. Not only is a sole proprietorship easy to start, but everyone likes the idea of receiving all the profits from the business, saving on unemployment taxes, and having more freedom to withdraw assets.

Easy to Organize

The great advantage of operating a new business as a sole proprietorship is that it is simple and does not require any formal action to set it up. You can start your business today as a sole proprietorship — there is no need to wait for an attorney to draft and file documents or for the government to approve them. Of course, you will need a business license, and a growing number of states require you to register to do business.

Profit (or Loss) Is Yours

All of the profit or loss from your business belongs to you and must be reported on your federal income tax return, *Schedule C, Income (or Loss) from a Business or Profession*, on *Form 1040*. This can either be an advantage or a disadvantage for income tax purposes, depending on the circumstances.

If operating the business results in losses or significant tax credits, you may be able to use the tax losses or tax credits to reduce taxes on income from other sources. Or, if your sole proprietorship generates modest profits — but not more than about $60,000 to $75,000 a year — overall taxes may be less than if incorporated, assuming you need most of the income to live on.

Unemployment Tax Savings

As a sole proprietor, you are not considered an employee of your business. As a result, you will avoid having to pay unemployment taxes on your earnings from the business. Both the state and federal governments impose unemployment taxes on wages or salaries, but not on self-employment income. Note that a corporation would normally get an income tax deduction for the unemployment tax it paid on your salary, so that the actual after-tax savings from operating as a sole proprietorship would be somewhat less than the unemployment taxes you would avoid paying. Refer to sections 5.3 and 11.5 regarding the unemployment taxes you must pay for each employee.

Withdraw Assets Tax Free

Another advantage of a sole proprietorship is that you can shift funds in and out of your business account or withdraw assets from the business with few tax, legal, or other limitations. In a partnership or a limited liability company, you can generally withdraw funds only by agreement and, in the case of a corporation, a withdrawal of funds or property will usually be taxable as a dividend or capital gain and may violate some states' corporation laws.

Disadvantages

As with any decision, you must always look at the downside of a situation or opportunity so you not only make a more informed decision, but you also realize what to expect in a negative sense, once you decide to move ahead. Sole proprietorships have several advantages, but be sure to consider some important disadvantages.

Personal Liability

As the owner of the sole proprietorship, you will be personally liable for any debts or taxes of the business or other claims, such as legal damages resulting from a lawsuit. This is one reason why many entrepreneurs prefer to use a corporation rather than a sole proprietorship. Unlimited personal liability is perhaps the major disadvantage of operating a business in the form of a sole proprietorship.

Limited Tax Savings for Fringe Benefits

A major disadvantage of sole proprietorships (and partnerships) is they cannot obtain a number of significant tax benefits regarding group-term life insurance benefits, long-term disability insurance coverage, and medical insurance or medical expense reimbursements. To qualify for favorable tax treatment regarding these fringe benefit plans, you need to incorporate. A self-employed individual is allowed to deduct 30% of his or her health insurance when computing adjusted gross income.[1] Beginning January 1, 1997 the deduction rises to 40% and will continue to gradually increase to 80% over a period of several years.

The special advantages of corporate pension and profit-sharing plans have largely been eliminated. There are now virtually no differences in the tax treatment of self-employed (Keogh) plans of sole proprietorships and partnerships, as compared with corporate retirement plans. See Section 8.3.

2.3 Advantages and Disadvantages of Partnerships

In general, any two or more individuals or entities who agree to contribute money, labor, property, or skill to a business and who agree to share in its profits, losses, and management are considered to have a partnership. You can choose to have a general partnership or a limited partnership, or in a growing number of states, a limited liability partnership in lieu of a professional corporation.

General Partnerships

Creating a general partnership can be a very simple matter since the law does not require any official written documents or other formalities for most partnerships. As a practical matter, however, it is much sounder business practice for partners in a business to have a written partnership agreement that, at a minimum, spells out their agreement on basic issues such as:

- How much and what kind of property each partner will contribute to the venture;
- What value will be placed on the contributed property;
- How profits and losses will be divided among the partners;
- When and how profits will be withdrawn;
- Whether or how certain partners will be compensated for their services to the partnership or for making capital available to the partnership; and
- How changes in ownership of interests in the partnership will be handled.

A written partnership agreement should be prepared by an attorney and, if possible, should be reviewed by a tax accountant before it is put into effect. Partnerships are a bit like marriages; they usually start out with a great deal of trust but have a high break-up rate. Be advised that partnerships are easy to get into, require a lot of patience and understanding to live with, and are often costly and painful to get out of.

Advantages

If you are considering having a partner or partners in your new venture, you will be interested in the discussion below, which features some reasons why having a partnership can be advantageous.

- Complete control over operations. As a partner, you are an agent for the partnership and can do anything necessary to operate the business, such as hire employees, borrow money, or enter into contracts on behalf of the partnership.
- Flexibility in withdrawing assets. Taking money or other assets out of a partnership is slightly more complicated than with a sole proprietorship, but you have much more flexibility than in the case of a corporation, and usually no serious tax or legal consequences result from withdrawing assets out of a partnership — provided you don't violate the terms of your partnership agreement.
- Favorable taxation on income for partners. Like a sole proprietor, a partner is not generally considered an employee of the partnership for income tax and payroll tax purposes. The income tax advantages and disadvantages of a sole proprietorship are equally applicable to a partnership since a partner's share of income from a partnership is treated essentially the same as income from a sole proprietorship. For example, your income from a partnership may be subject to federal self-employment tax but not to federal and state unemployment taxes, as discussed in Section 2.2.
- Partnership pays no income tax. While a partnership must file federal and usually state information returns — *Form 1065* is the federal form — it generally pays no income tax. Instead, the partnership reports each partner's share of income or loss on the information return, and each partner reports the income or loss on *Schedule E* of his or her individual income tax return, *Form 1040*. In addition, partnerships are required to file a special report, *Form 8308*, with the IRS each time a sale or exchange of an interest in the partnership occurs.[2]
- Assistance in operations. One less appealing aspect of starting your own business is the long hours and extra duties you will take on as owner/manager. If you have a trustworthy, conscientious partner by your side, you will be in a better position to have competent assistance with the day-to-day operations of running your partnership. Your chances of catching a mistake, meeting a particular deadline, or improving product quality and overall service will be increased. In addition, a potential partner could bring an expertise into the business that otherwise would have to be brought in by hiring an employee or outside consultant. Having a diverse partnership, with each partner using his or her strengths to improve operations, will only prove worthwhile in the long run.

Disadvantages

Knowing some of the positive aspects of organizing a partnership gives you a chance to better weigh the negative aspects, such as disagreements, taxable year, unlimited personal liability for the partnership's debts, and uncertainty in the event one of the partners dies.

- Dissension among partners. While a good relationship between partners can make for a strong business team, the downside risk is that you and your partner or partners may not get along. You and one or more of your partners may, in fact, have totally different views about how the business is to be run, which can lead to dissension, acrimony, deadlock, and in some cases, dissolution of the partnership or even lawsuits.
- Taxable year issue. Unlike C corporations, partnerships are generally not allowed to use a fiscal year for tax purposes. Instead, they must report on a calendar-year basis. Those partnerships that are allowed to use a fiscal tax year are required to report and pay income taxes directly if the use of a fiscal year would otherwise result in a tax-deferral benefit to its partners.[3]
- Liability of partners. You and each of your partners — except for a limited partner in a limited partnership — have personal liability for the debts, taxes, and other claims against the partnership. If the partnership's assets are not sufficient to pay creditors, the creditors can satisfy their claims out of your personal assets. In addition, when any partner fails to pay personal debts, the partnership's business may be disrupted if his or her creditors proceed to satisfy their claims out of his or her interest in the partnership by seeking what is called a charging order against partnership assets.
- No perpetual existence. Unless a partnership agreement provides otherwise, a partnership usually terminates when any partner dies or withdraws from the partnership. This is in contrast to a corporation, which theoretically, has perpetual existence. Under the laws of most states, bankruptcy of a partner or the partnership itself will cause the dissolution of the partnership, regardless of any agreement.

Limited Partnerships

In contrast to the general partnership, which has unlimited personal liability for all of its partners, the limited partnership allows investors who will not be actively involved in the partnership's operations to become partners without being exposed to unlimited liability for the business' debts if it should go out of business.

A limited partner risks only his or her investment but must allow one or more general partners to exercise control over the business. In fact, if the limited partner becomes involved in the partnership's operations, he or she may lose his or her protected status as a limited partner. The general partners in a limited partnership are fully liable for the partnership's debts. Every limited partnership must have one or more general partners, as well as one or more limited partners.

Besides enjoying all the benefits derived from limited personal liability, a limited partner's share of the partnership's income is not subject to the self-employment tax.[4]

State law requires certain formalities in the case of a limited partnership that are not required for other partnerships. To qualify for their special status, limited partnerships must usually file a certificate of limited partnership with the secretary of state or other state and county offices. Establishing a limited partnership also requires a written partnership agreement. See Section 11.2 regarding special filing requirements for partnerships under state law.

Limited Liability Partnerships

Of the 48 states — plus the District of Columbia — that have enacted limited liability company (LLC) laws, 41 have now also enacted additional provisions for another new type of entity, the limited liability partnership (LLP). See Section 2.6. In general, the LLP is simply a regular general partnership that is granted limited liability — like a corporation or LLC — if it files a required form or statement with the state.

LLPs vary considerably from state to state. In some states, they are allowed only for certain professional service firms, as an alternative to professional corporations, while in others an LLP may engage in any lawful business.

Generally, where allowable for professional service firms, they provide only the same, partial limitation of liability as do professional corporations — that is, they do not offer any limitation on personal liability for malpractice of an individual practitioner of a profession such as law or medicine, but do protect the practitioner from personal liability for the malpractice of a partner, as well as from general debts of the partnership to trade creditors.

Advantages

While LLPs have not garnered the degree of attention recently focused on LLCs, they have a number of advantages over LLCs, corporations, or other partnerships.

- Like LLCs or S corporations, LLPs have the tax advantage of flow-through tax treatment — that is, they will generally qualify for partnership tax treatment for federal income tax purposes. In addition, most states treat LLPs as partnerships for tax purposes, which is usually advantageous. Even states that treat LLCs less favorably for tax purposes, such as California, tend to grant more favorable tax treatment to LLPs.
- Like LLCs, they are not subject to the numerous limitations that apply to S corporations with regard to ownership, capital structure, and division of profits.
- LLPs have the advantages of simplicity and familiarity, as compared with LLCs. In most cases, an existing partnership can simply elect to become an LLP by filing a specified form or document and paying the applicable fee. There is usually no need to draw up a new governing document, such as articles of incorporation or articles of organization, as for a corporation or LLC. The existing partnership agreement can generally continue to serve as the governing document when a regular partnership becomes an LLP.

Disadvantages

Despite the obvious advantages of LLPs, do not be in too great a rush to set one up, even if you are located in one of the states that has adopted a limited liability partnership law. Keep in mind several disadvantages of operating your business as an LLP.

- You may not actually have limited liability if you conduct business in any of the ten states that do not yet have an LLP law. Creditors in any of those states would be free to go after your personal assets if the business failed.
- Even if your home state and the other states in which you do business all have LLP laws, some of those state laws provide that if you fail to properly register as a foreign LLP, or forget to make annual filings required of both domestic and foreign LLPs, your LLP status may be lost and your partnership will revert to plain vanilla, general partnership status by operation of state law.
- Sole owners will not be able to establish LLPs since, as a partnership, an LLP must have at least two partners to exist.
- The self-employment tax treatment of partners in an LLP is uncertain at present. While limited partners in a limited partnership are not subject to self-employment tax on their share of the partnership income, and IRS proposed regulations would also exempt nonmanagerial partners in some LLCs from self-employment taxation, there is no existing or proposed similar exemption for any partners in an LLP.

2.4 Advantages and Disadvantages of Corporations

When you are considering which legal entity to choose for your business, you will want to carefully consider the pros and cons of the corporation. A corporation is unlike any other form of doing business because it is considered by federal and state law to be an artificial legal entity that exists separately from the people who own, manage, control, and operate it. It can make contracts, pay taxes, and is liable for debts. Corporations exist only because state statutory laws allow them to be created. Deciding whether to incorporate in this state or elsewhere is discussed in Section 9.12.

A business corporation issues shares of its stock, as evidence of ownership, to the person or persons who contribute the money or business assets that the corporation will use to conduct its business. Thus, the stockholders or shareholders are the owners of the corporation, and they are entitled to any dividends the corporation pays and to all corporation assets — after all creditors have been paid — if the corporation is liquidated.

Corporations can exist in many different forms. For example, there is the regular C corporation, which is the main focus of this section; the S corporation, which is discussed in Section 2.5; and the personal service corporation, which is mentioned briefly at the end of this section.

Before getting into the general advantages and disadvantages of incorporating, you need to know that to set up a corporation, you must file articles of incorporation with the state office that grants and approves corporate charters. See Section 11.2 for more information on state incorporation requirements. In addition to the requirements for establishing a corporation, there will be recurring costs, often including annual franchise or corporate income taxes.

Corporate Taxes

Since many of the advantages associated with incorporating involve how a corporation is taxed on its income, it is important that you understand corporate tax rates and how your income from the corporation is viewed by the IRS. Corporations filing their income tax returns on *Form 1120-A* or *Form 1120* will be taxed at different rates depending on the amount of their taxable income. The following table lists the current federal corporate income tax rates, which are 39% in the highest bracket.

Taxable Income	**Tax Rate**
Not more than $50,000	15%
$50,000 to $75,000	25
$75,000 to $100,000	34
$100,000 to $335,000	39
$335,000 to $10 million	34
$10 million to $15 million	35
$15 million to $18,333,333	38
More than $18,333,333	35

As a corporate shareholder/owner, you will be considered an employee and most likely draw a salary from your corporation. This salary will be subject to personal income tax, FICA (Social Security) taxes, and state and federal unemployment taxes. FICA taxes are generally the same (in total) on the wages of a corporate employee/owner as would be the self-employment tax on the same amount of business income if you were a sole proprietor or a partner.

Advantages

Some of the tax advantages of a corporation include income splitting, fringe benefit plan tax deductions, the dividends received deduction, and the tax break for investing in small business stock. In addition to these tax advantages, there is also the benefit of limited personal liability and continuous existence.

Income Splitting

By using a corporation, it may be possible to split your overall profit between two or more taxpayers so that none of the income gets taxed in the highest tax brackets. Thus, the total tax paid by the two taxpayers — you and your corporation — may be less than if all of the income were taxed to you, as in a sole proprietorship. See Section 8.2 for a more detailed discussion of how income splitting can help reduce your income and estate taxes.

Fringe Benefit Plan Deductions

Federal and state tax laws permit you, as a corporate employer, to provide a number of different fringe benefits to shareholders/employees on a tax-favored basis. These tax-favored fringe benefits include medical insurance plans, self-insured medical reimbursement plans, disability insurance, and group-term life insurance. An unincorporated business receives the same tax treatment for its employees, but not for its owners. In addition, a corporation — other than an S corporation — can generally deduct medical insurance premiums it makes on behalf of an employee, who is an owner of the business, and the employee is not taxed on the value of the benefit provided. This is far more favorable than payments of salary to an employee, which are fully taxable. So the tax benefits of employee fringe benefits are another reason for incorporating your business and becoming an employee of the corporation.

Major types of fringe benefits that allow for tax deductions to the corporation and no taxable income to the employee are discussed in more detail in Section 8.3.

Tax Break for Dividends Received by a Corporation

Another important tax advantage of a C corporation is that, in general, it can deduct 70% of the dividends it receives from stock investments from its federal taxable income.[5] This tax benefit, called the dividends received deduction, is discussed more in Section 8.2.

Tax Break for Investing in Small Business Stock

The Clinton tax package that was enacted in August 1993 provides a major tax incentive for investing in the stock of certain small corporations. This incentive is not available for investments in unincorporated businesses or in stock of S corporations.

A noncorporate investor who purchases "qualified small business stock" after August 10, 1993 and holds it for five years or more will be allowed to exclude from his or her taxable income up to 50% of any capital gain reported on the sale of stock.[6] If the current maximum tax rate on capital gains remains at 28%, this would translate into a very low effective tax rate of only 14% on gains from qualified small business stock.

Qualified small business stock is stock of a C corporation that meets an active business test during the period the stock is held. To meet the active business test, a corporation must use at least 80% of its assets in the conduct of one or more qualified trades or businesses. Personal service firms, banks, finance or investment businesses, insurance companies, and farming businesses are not considered qualified trades or businesses; neither are companies in certain extractive industries, or in the hotel, motel, or restaurant businesses. In addition, the corporation must not have more than $50 million in gross assets before or immediately after the stock is issued to the investor.

Stock in a special entity, such as a Domestic International Sales Corporation (DISC), regulated investment company, or a real estate investment trust, is also considered ineligible for this tax incentive.

Limited Personal Liability

The main reason most businesses incorporate is to limit owner liability to the amount invested in the business. Generally, stockholders in a corporation are not personally liable for claims against the corporation and are, therefore, at risk only to the extent of their investment in the corporation. Likewise, the officers and directors of a corporation are not normally liable for the corporation's debts, although in some cases, an officer whose duty it is to withhold federal income tax from employees' wages may be liable to the IRS if the taxes are not withheld and paid over to the IRS as required.

Being incorporated can also protect you from personal liability regarding lawsuit damages not covered by your corporation's liability insurance policies; for example, someone slips on a banana peel in your store and sues the corporation for ten million dollars.

When you incorporate, however, you need to follow several corporate formalities and requirements to protect your limited liability benefit. For example, don't start a corporation on a shoestring. If your corporation is capitalized too thinly with equity capital (your money) as compared to debt capital (borrowed money), the courts may determine that your corporation is a thin corporation and hold you and your stockholders directly liable to creditors.

Failure to observe corporate formalities, such as the election of directors by shareholders and appointment of officers by action of the board of directors, and the separate legal existence of the corporation can have a similar result. This is called "piercing the corporate veil" by the courts, and means if a corporation is not adequately capitalized and properly operated to protect the interests of creditors, the courts can take away the veil of limited liability that normally protects the stockholders. Piercing the corporate veil is relatively uncommon. A much more frequent problem is that many banks and other lenders will not loan money to a small incorporated business unless someone, usually the stockholders of the corporation, personally guarantees repayment of the loan.

Despite this common business practice, the limited liability feature can still be an important protection from personal liability for other debts, such as accounts payable to suppliers and others who sell goods or services to the corporation on credit, typically without requiring any personal guarantee of payment by the owners. Even this partial protection is a significant advantage of incorporating for most small business owners. To help you avoid personal liability for corporate acts, consult your attorney and keep thorough and specific records of your corporation's operations, policies, and meetings.

Continuous Existence

Unlike a sole proprietorship or partnership, a corporation has continuous existence and does not terminate upon the death of a stockholder or a change of ownership of some or all of its stock. Creditors, suppliers, and customers, therefore, often prefer to deal with an incorporated business because of this greater continuity. Naturally, a corporation can be terminated by mutual consent of the owners or even by one stockholder in some instances.

Disadvantages

In addition to having much more paperwork and recordkeeping requirements — in order to maintain the corporate veil of limited liability — corporations must ensure they meet all annual report filings and SEC requirements as well. Incorporation takes a lot of organization and maintenance, and you will want to know all you can about its operations and costs.

Cost of Incorporating

Besides the usual filing fees that are required by state agencies for articles of incorporation, name reservation, and issuing stock, legal fees usually run between $500 and $1,000, even for a simple incorporation. And if it is necessary to obtain a permit from the state to issue stock or securities, legal fees can be much more. Thus, one of the disadvantages of incorporating is the cost involved, which will be substantial even for the simplest incorporation.

Double Taxation

While this section has outlined a number of important tax advantages of incorporating a business, the picture is not all that one-sided. Regular corporations have one major potential disadvantage that usually does not exist for other legal forms of doing business — the problem of potential double taxation of the earnings of the corporation. This problem arises because a C corporation must pay corporate income taxes on its taxable income. Then, the after-tax earnings may be subject to a second tax on either the individual stockholders, if the earnings are distributed as dividends, or as a corporate penalty tax if the earnings are not distributed as dividends.

The main ways in which a corporation's earnings can be subject to double taxation are:

- Payment of taxable dividends
- Penalty tax on corporate accumulated earnings
- Penalty tax on personal holding company income

See Section 8.9 for a discussion of these and other various tax-planning techniques that will permit you to avoid the problems of potential double taxation listed above. Most of those disadvantages are not applicable if you elect S corporation status.

Personal Service Corporations

Certain kinds of corporations, called qualified personal service corporations (QPSCs), are taxed at a flat rate of 35%, instead of the graduated tax rates listed in the corporate tax rate table featured earlier in this section.[7] While it may not always be clear whether an incorporated service business is a QPSC, the IRS defines a QPSC by these characteristics:

- At least 95% of the value of its stock is held by employees or their estates or beneficiaries; and
- The employees perform services at least 95% of the time in the following fields: health, law, engineering, architecture, accounting, actuarial science, performing arts, or consulting.

2.5 Advantages and Disadvantages of S Corporations

The first thing to understand about S corporations — formerly referred to as Subchapter S corporations — is they are just like any other corporation in terms of corporate law requirements, limited liability of shareholders, and all other corporate aspects; however, they are treated differently when it comes to how they are taxed. An S corporation is simply a regular corporation that meets certain requirements and has elected to be treated somewhat like a partnership for federal income tax purposes. Most, but not all, states also allow this special tax treatment for S corporations. See Section 11.2 for a discussion of how S corporations are treated for tax purposes in this state.

S Corporation Requirements

To qualify for S corporation treatment, your corporation must meet the following requirements:

- It must be a domestic corporation — that is, incorporated in the United States.[8]
- No shareholder can be a nonresident alien individual.[9]
- All of its shareholders must generally be individuals, although certain trusts, called Qualified Subchapter S Trusts and Grantor Trusts, may hold stock under certain circumstances. No shareholder can be a corporation or a partnership.[10]
- The corporation can have only one class of common stock and no preferred stock.[11]
- There cannot be more than 75 shareholders.[12] For this purpose, a husband and wife who are both stockholders will be counted as only one stockholder, whether or not they hold the stock in joint ownership.[13]
- The corporation cannot be a member of an affiliated group of corporations.[14] If it owns stock in a subsidiary that is considered an affiliate, it may not be able to qualify under the S corporation provisions.
- Less than 25% of the corporation's gross receipts must be from passive sources, such as interest income, dividends, rent, royalties, or proceeds from the sale of securities. If this test is failed in three successive tax years, S corporation status will be terminated.[15] The passive income limit does not apply at all for a brand new corporation or an existing corporation that has no accumulated earnings and profits when it elects S corporation status.[16]

See Section 9.14 for pending changes occurring with passage of the Small Business Job Protection Act of 1996.

Electing S Corporation Status

To become an S corporation, your company must meet the above requirements and file an election on *Form 2553* with the IRS. For your convenience, a sample of *Form 2553, Election by a Small Business Corporation*, is provided at the end of this chapter. The election must be signed by all of the corporation's shareholders,[17] including your spouse, who may have a community property interest in stock that is in your name. The S corporation election must be filed during the first two months and 15 days of the corporation's tax year for which the election is to go into effect or at any time during the preceding tax year.[18]

Since a newly formed corporation that wants to start out as an S corporation does not have a preceding tax year, it has to file an election in the two-month and 15-day period after it is considered to have begun its first tax year. Its first tax year is considered to start when it issues stock to shareholders, acquires assets, or begins to do business, whichever occurs first. Filing of articles of incorporation with the secretary of state usually does not begin the first taxable year.

Care must be taken to file the election at the right time, which can be tricky, since it is sometimes difficult to determine when a corporation first begins to do business. There can be some horrendous tax consequences if you operate the corporation as though it were an S corporation, and the election is later determined to have been filed too early or too late.

Extreme care must also be taken if a regular C corporation elects to change over to S corporation status; this should not be done without consulting a competent tax adviser. A regular corporation that elects to become an S corporation will generally be subject to an eventual corporate-level tax on any built-in gains on its assets — assets with a value greater than their tax basis — if assets are sold for a gain within ten years.

Federal Tax Treatment of S Corporations

Once a corporation has made an election with the IRS to be treated as an S corporation, its shareholders will generally report their share of the corporation's taxable income or loss on their individual tax returns. That is, the corporation "passes through" its income or loss and tax credits to the shareholders in proportion to their stock holdings in the corporation, much like a partnership.

The S corporation does not usually pay tax on any of its income. Any domestic S corporation, however, must file *Form 1120S, U.S. Income Tax Return for an S Corporation*, regardless of any tax due. *Form 1120S* must be filed by March 15, if filing under a calendar-year basis, or the 15th day of the third month following the close of a fiscal year.

An S corporation must furnish a copy of *Schedule K-1, Shareholder's Share of Income, Credits, Deductions* to each shareholder. By not providing *Schedule K-1* before filing *Form 1120S*, the S corporation could incur penalties.

Profits of an S corporation are deemed to be distributed to its shareholders on the last day of the corporation's tax year, whether or not the profits are actually distributed.[19] Thus, if profits of an S corporation are distributed as dividends, the distribution itself is ordinarily not taxable, so there is no double taxation of distributed profits.

Until the 1993 tax law changes, S corporations enjoyed a clear tax advantage over regular corporations because the maximum tax rate on S corporation income taxed to shareholders was significantly below the top regular corporation tax rate. However, now that the top individual rate is 39.6% on S corporation shareholders, and the top corporation rate is generally 34.0% or 35.0%, S corporations don't necessarily offer an advantage over regular corporations. They may even be at a tax disadvantage in the case of high-income S corporation shareholders who are in the 39.6% bracket — those with taxable incomes of more than 250 million dollars.

Terminating an S Corporation Election

If it becomes desirable to revoke or terminate S corporation status after a few years, as is often the case, this can be done if shareholders owning more than half the stock sign and file a revocation form.[20] A revocation is effective for the tax year it is filed if it is filed during the first two months and 15 days of that tax year.[21] If it is filed later in the year, it does not become effective until the next tax year.[22]

Doing anything, however, that causes the corporation to cease to qualify as an S corporation — such as selling stock to a corporate shareholder — will also terminate the election, effective on the first day after the corporation ceases to qualify as an S corporation. In that case, the company must file two short-period tax returns for the year, the first — up to the date it ceased to qualify — as an S corporation, the second as a regular taxable corporation.

Once a corporation terminates an S corporation election, it cannot re-elect S corporation status for five years, unless it obtains the consent of the IRS.[23]

Advantages

For a corporation, electing S corporation status can be very advantageous in some instances, and less so, or even disadvantageous in other situations. An S corporation election should not be made without the advice and assistance of a tax professional, since it is a very complex and technical area of the tax law.

Electing S corporation treatment for a corporation is usually most favorable in these types of situations:

- Where it is expected that the corporation will experience losses for the initial year or years of doing business and where the shareholders will have income from other sources that the "passed through" losses can shelter from tax. If S corporation losses are passive losses — such as losses from real estate investments — they can only be used to offset other passive activity income, except for certain shareholders who are real estate professionals.
- Where, because of the low tax brackets the shareholders are in, there will be tax savings if the anticipated profits of the corporation are passed through to them rather than being taxed at corporate tax rates.

- Where, particularly in the case of a new business, the risk of failure makes the limited liability feature of a corporation important, and where flow-through tax treatment of losses or income is desired. A regular corporation provides limited liability, but not flow-through tax treatment. A sole proprietorship or partnership provides the latter, but not limited liability. While it is true that both flow-through tax treatment and limited liability can be obtained in most states by creating a limited liability company (LLC), an LLC must have at least two owners, unlike an S corporation, which can be owned entirely by one person.
- Where the nature of the corporation's business is such that the corporation does not need to retain a major portion of profits in the business. In this case, all or most of the profits can be distributed as dividends without the double taxation that would occur if no S corporation election were in effect.
- Where a corporation is in danger of incurring an accumulated earnings penalty tax for failure to pay out its profits as dividends.

Disadvantages

While there are some significant advantages to operating as an S corporation, the S corporation election is frequently not advisable under some circumstances. Some of the possible disadvantages of operating your business in the form of an S corporation are:

- The change to S corporation status may eventually result in a large corporate-level tax on built-in gains or an immediate last in, first out (LIFO) recapture tax.
- The tax law regarding S corporations is very complex and you should expect to pay fairly substantial additional legal or accounting fees to your tax adviser, compared to what would be necessary with a regular corporation.
- S corporations are now treated almost exactly like regular corporations with respect to pension and profit-sharing plans. One important difference remains; any employee who owns 5% or more of the stock and participates in the S corporation's pension or profit-sharing plan is prohibited from borrowing from the plan, unlike a participant in a regular corporation's retirement plan.[24]
- Certain built-in gains of an S corporation may be taxed to the corporation and the shareholder for federal tax purposes.[25] Built-in gains are untaxed gains on the assets of a corporation that would have been recognized as taxable if the assets had been sold at fair market value on the day a corporation became an S corporation. In addition, capital gains on sale of the stock of an S corporation will not qualify for the new 50% capital gain exclusion that is discussed in Section 2.4 under "Tax Break for Investing in Small Business Stock."
- Fringe benefit payments for medical, disability, and group-term life insurance for 2% shareholders are deductible, to the corporation, but are taxable to the shareholder/employee.[26] An exception to this partnership treatment

of S corporation shareholders is for medical insurance premiums paid on their behalf, which can be deducted by the S corporation. However, the amount deducted by the corporation for medical insurance must be reported as taxable compensation income on the shareholder/employee's *Form W-2*, for income tax purposes,[27] but not for FICA (Social Security) tax purposes if the insurance plan covers employees generally.[28]

- S corporations cannot benefit from the corporate dividends received deduction that is discussed in further detail in Section 8.2.
- Unlike many regular corporations, very few newly electing S corporations may now have a fiscal tax year that ends earlier than September.[29]

2.6 Advantages and Disadvantages of Limited Liability Companies

The S corporation and the limited partnership may soon become endangered species due to the appearance of a new form of legal entity that has a number of advantages over both and that is proliferating across the country. This new type of entity is called a limited liability company (LLC). An LLC closely resembles and is taxed as a partnership, but it offers the benefit of limited liability, just like corporations. It is also similar to a limited partnership, except that in an LLC, all partners have the benefit of limited liability.

In 1988, the IRS concluded in Revenue Ruling 88-76 that a Wyoming limited liability company could be classified as a partnership for federal income tax purposes, despite its limited liability, because it lacked continuity of life. Under Wyoming law, LLCs have to terminate in a specified period of years, usually 30 years or less.

Another reason for this classification is because interests in the LLC were not freely transferable. This ruling was highly favorable, from a taxpayer's standpoint, because it held that an LLC, which offers the corporate benefits of limited liability, could qualify for the flexible flow-through tax treatment of a partnership. Because this favorable IRS ruling opened the floodgates, the District of Columbia and every state but Hawaii and Vermont have now followed Wyoming's lead in adopting similar LLC laws.

Advantages

Doing business as an LLC has a number of benefits over any other form of business organization, which accounts for the sudden popularity of this new type of business entity. Advantages of the LLC include the following:

- It combines the limited liability features of a corporation and the flow-through tax treatment of income and losses of a partnership.
- While a limited partnership can offer some of the benefits of an LLC, a limited partnership must have at least one general partner who is personally liable for the debts of the business. This is not required of an LLC.

- Unlike a general partnership, owners of an LLC have limited liability, and, unlike limited partners in a limited partnership, they do not lose their limited liability if they actively participate in management.
- While its flow-through tax advantages are generally only slightly superior to those of an S corporation, an LLC is not subject to the numerous technical rules that apply to S corporations. Thus, for example, an LLC can have more than 75 shareholders; have foreign owners ("members"); have owners that are corporations, partnerships, trusts, or other LLCs; own 80% or more of the stock of an affiliated corporation; derive a large portion of its revenue from certain net passive income sources; and issue more than one class of stock. Violation of any one of these technical restrictions may disqualify an S corporation.
- For certain leveraged real estate investments, LLCs have significant advantages over either partnerships or S corporations with regard to the ability of the owners to take tax losses, under technical tax rules having to do with "tax basis."

Disadvantages

Despite the obvious advantages of LLCs, do not be in too great a rush to set one up, even if you are located in one of the states that has adopted a limited liability company law. Some of the disadvantages of operating your business as an LLC are as follows:

- You may not actually have limited liability if you conduct any business in Hawaii or Vermont, which do not yet have LLC laws. Creditors in those states would be free to go after your personal assets if the business failed. However, both of these states are now considering adoption of LLC laws.
- LLC laws are very new and untested, unlike the corporation and partnership laws, which have evolved over very long periods of time. As such, your lawyer may not be able to give you clear advice on a number of legal questions that may arise in the course of operating an LLC, which could lead to some unpleasant surprises.
- Sole owners will not generally be able to establish LLCs. Under the LLC laws in almost every state, an LLC must have at least two owners. Thus, if you are a sole proprietor, you will have to operate it as a corporation or sole proprietorship, in most cases. One way to get around this problem, however, would be to make your spouse a second member of the LLC.
- Even if you were to create a single-owner LLC under the laws of a state that permits one-person LLCs — Arkansas, for example — the tax consequences are likely to be unfavorable. The IRS has ruled that multi-owner LLCs can qualify for favorable partnership tax treatment, but in late 1994, Monte Jackel, IRS Deputy Associate Chief Counsel, warned that taxpayers should not assume a single-member LLC would qualify for pass-through tax treatment, and indicated this issue would soon be addressed in an upcoming IRS Revenue Procedure.
- Considerable care must be taken, under a number of states' LLC laws, to properly structure an LLC so that it will qualify for favorable treatment

by the IRS for federal income tax purposes. Merely hiring an attorney to set up an LLC will not, in many cases, be sufficient to ensure that your LLC will qualify to be taxed as a partnership, rather than a corporation. If your attorney who draws up the articles of organization is not sophisticated in tax matters, you may need to have the documents reviewed, before articles of organization are filed, by a skilled tax professional who understands the IRS ruling criteria for tax treatment of LLCs as partnerships.

- A significant disadvantage of an LLC, compared to a limited partnership, is that limited partners in a limited partnership are not subject to the self-employment tax on their distributive share of the partnership's profits.[30] No such exemption is currently available for an LLC that is treated as a partnership for tax purposes. However, IRS Proposed Regulations, if they go into effect, will treat certain nonmanaging members of an LLC like limited partners, thus exempting them from self-employment tax on their share of an LLC's earnings, in states where state law permits designation of certain members of an LLC as managers and others as nonmanagers.[31]
- While most states will follow federal tax treatment of an LLC where it is taxable as a partnership for federal income tax purposes, a few states, for example, Alaska and Florida, impose a corporate income or franchise tax on LLCs.
- Perhaps unintentionally, a partnership tax law provision in the Revenue Reconciliation Act of 1993 will adversely impact some professional service firms that are organized as LLCs, rather than as partnerships. Under the 1993 tax law amendments, certain payments made by partnerships to outgoing partners, for goodwill or unrealized receivables, are no longer deductible to the partnership, unless made to a general partner in a service partnership, such as a law or medical partnership.[32]

  Since LLCs, if properly organized, are treated as partnerships for income tax purposes, this new law will apply equally to professional service firms that are either LLCs or partnerships — with one important Catch-22. Since an LLC has no general partners (all of its partners have limited liability, like limited partners), then no payments by an LLC to buy out one of its members will qualify as deductible under the new tax law. This can be a serious tax disadvantage for a professional service firm that operates as an LLC rather than as a partnership.
- Although LLCs can engage in most businesses that are permissible for a corporation to engage in, certain states do not yet allow for professional service firms, such as law firms, physicians, or other professionals, to operate in LLC form.
- Finally, most of the states with LLC laws have a built-in requirement that an LLC must terminate within 30 years, which is not required of other kinds of business entities.

In Revenue Ruling 95-37, the IRS ruled favorably that an existing partnership may generally be converted, tax-free, to an LLC if the LLC qualifies for partnership tax treatment. In fact, this conversion can be done without terminating the partnership's taxable year — the LLC is simply treated as a continuation partnership — and without obtaining a new federal employer identification number for the LLC.

In contrast, be aware there is no tax-free way to convert a corporation to an LLC. The conversion of an existing incorporated business to an LLC is likely to have severe tax consequences, including:

- Recognition of gain or loss by the corporation upon distribution or transfer of its assets; and
- Recognition of gain or loss by the shareholders upon liquidation of their stock in exchange for the corporation's assets.

Accordingly, extreme caution is advised before adopting LLC status. Consult a good tax adviser before you even consider setting up an LLC, despite its obvious attractions. See Chapter 11 for more specific information on LLCs in this state.

Endnotes

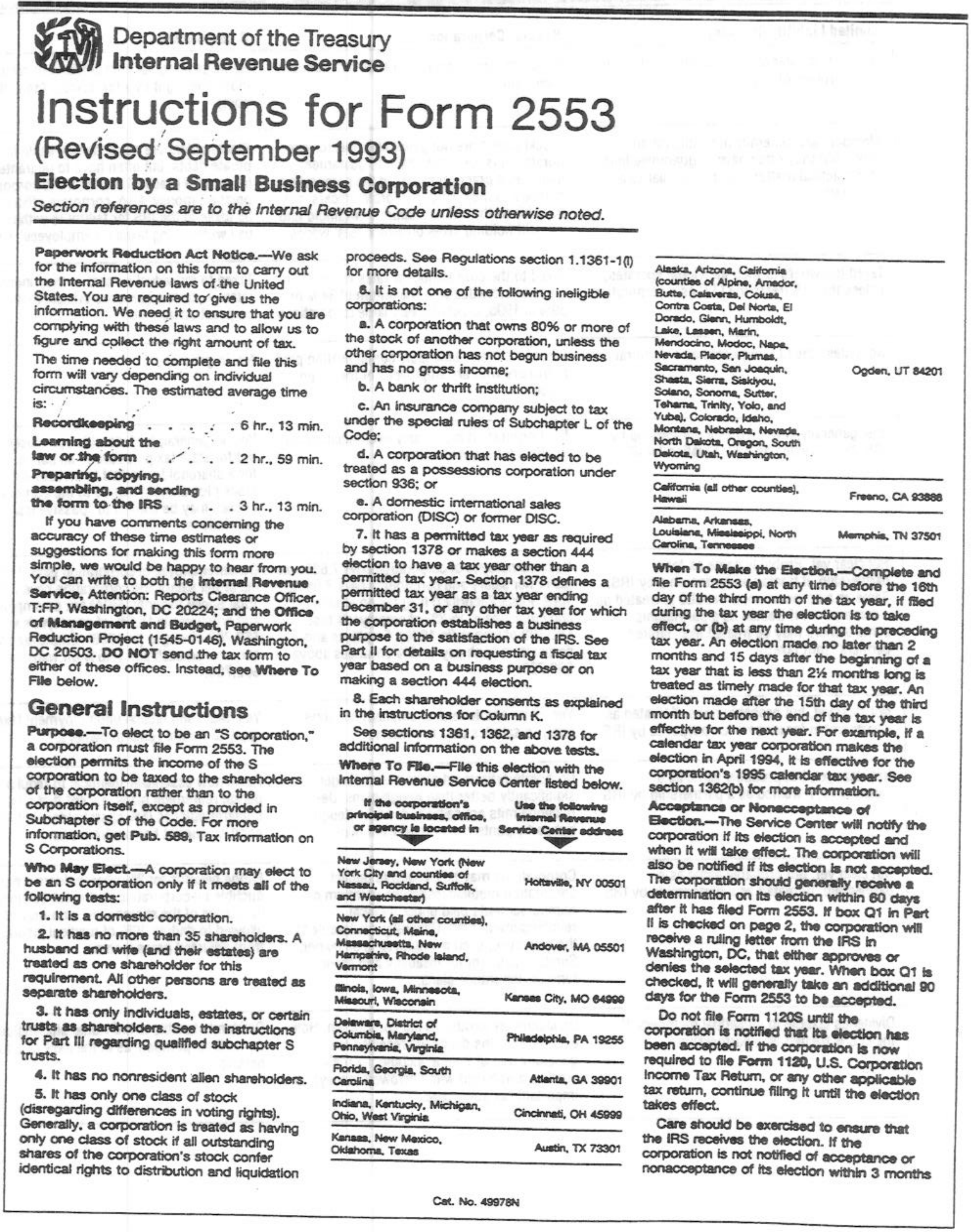
1. I.R.C. § 162(l).
2. I.R.C. § 6050K.
3. I.R.C. §§ 444 and 7519.
4. I.R.C. § 1402(a)(13).
5. I.R.C. § 243(a).
6. I.R.C. § 1202.
7. I.R.C. § 11(b)(2).
8. I.R.C. § 1361(b).
9. I.R.C. § 1361(b)(1)(C).
10. I.R.C. § 1361(b)(1)(B).
11. I.R.C. § 1361(b)(1)(D).
12. I.R.C. § 1361(b)(1)(A).
13. I.R.C. § 1361(c).
14. I.R.C. § 1361(b)(2)(A).
15. I.R.C. § 1362(d)(3).
16. I.R.C. § 1362(d)(3)(B).
17. I.R.C. § 1362(a)(2).
18. I.R.C. § 1362(b).
19. I.R.C. § 1366.
20. I.R.C. § 1362(d)(1)(B).
21. I.R.C. § 1362(d)(1)(C)(i).
22. I.R.C. § 1362(d)(i)(C)(ii).
23. I.R.C. § 1362(g).
24. I.R.C. § 4975(d).
25. I.R.C. § 1374(a).
26. Rev. Rul. 91-26, 1991-1 C.B. 184.
27. Id.
28. I.R.S. Ann. 92-16, 1992-5 I.R.B. 53.
29. I.R.C. § 1378(a).
30. I.R.C. § 1402(a)(13).
31. Prop. Reg. § 1.1402(a)-18.
32. I.R.C. § 736(b)(3).

Key Characteristics of the Various Legal Forms of Business Organization – Summary

	Proprietorship	General or Limited Partnership
Simplicity in Operation and Formation	Simplest to establish and operate.	Relatively simple and informal, except that a limited partnership must have a written agreement.
Liability for Debts, Taxes, and Other Claims	Owner has unlimited personal liability.	General partners have unlimited personal liability; limited partners are only at risk to the extent of their investment.
Federal Income Taxation of Business Profits	Taxed to the owner at individual tax rates of up to 39.6% or more, depending on exemptions and deductions which may phase out.	Taxed to partners at their individual tax rates.
Double Taxation if Profits Withdrawn from Business	No.	No.
Deduction of Losses by Owners	Yes. May be subject to "passive loss" restrictions.	Yes. But limited partner's deductions cannot exceed amount invested as a limited partner — except for real estate, in some instances. Losses are generally restricted by the "passive loss" rules.
Social Security Tax on Earnings of Owner from Business	15.3% of owner's self-employment earnings in 1996 on first $62,700 of income, plus 2.9% on earnings of more than $62,700, half of which is now deductible for income tax purposes.	15.3% of each partner's share of self-employment earnings from the business in 1996 on up to $62,700 in earnings are taxed, plus 2.9% tax on earnings over $62,700. Half of tax is deductible for income tax. Limited partners are generally not subject to self-employment tax.
Unemployment Taxes on Earnings of Owner from Business	None.	None.
Retirement Plans	Keogh plan. Deductions, other features now generally the same as for corporate pension and profit-sharing plans. But proprietor cannot borrow from Keogh Plan.	Keogh plan. Same as for proprietorships. A 10% partner cannot borrow from Keogh Plan.
Tax Treatment of Medical, Disability, and Group-Term Life Insurance on Owners	Not deductible, except part of medical expenses may be an itemized deduction on owner's tax return, including medical insurance premiums. However, 30% of medical insurance on an owner is allowed as a deduction from adjusted gross income. This deduction increases to 40% in 1997.	Not deductible, except part of medical expenses may be an itemized deduction on owner's tax return, including medical insurance premiums. However, 30% of medical insurance on an owner is allowed as a deduction from adjusted gross income.
Taxation of Dividends Received on Investments	Dividends received on stock investments are fully taxable to owner.	Dividends taxable to individual partners. See proprietorship.

Limited Liability Company	**Regular Corporation**	**S Corporation**
Generally similar to a partnership, but required to file articles of organization.	Requires most formality in establishment and operation.	Same as a regular corporation but requires close oversight by a tax adviser (an additional cost).
Members are generally not liable for an LLC's debts, but they often have to guarantee loans, as a practical matter, which is similar to a corporation.	Stockholders are not generally liable for corporate debts, but often have to guarantee loans, as a practical matter, if the corporation borrows money. Also, corporate officers may be liable to the IRS for failure to withhold and pay withholding taxes on employees' wages.	Stockholders are not generally liable for corporate debts, but often have to guarantee loans, as a practical matter, if the corporation borrows money. Also, corporate officers may be liable to the IRS for failure to withhold and pay withholding taxes on employees' wages.
Taxed to owners at their individual tax rates, unless the IRS treats the LLC as a corporation.	Taxed to the corporation, at rates higher than those of individuals — maximum of 34% or 39% in 1995, except for very large corporations.	Taxed to individual owners at their individual rates — certain gains are taxable to the corporation as well.
No, unless the LLC is treated as a corporation.	Yes, but not on reasonable compensation paid to owners who are employees of the corporation.	No, in general.
Yes, generally, if treated as a partnership by IRS. No, if treated as a corporation by IRS.	No. Corporation must carry over initial losses to offset future profits, if any.	Yes, in general, for federal tax purposes. But not for state tax purposes in all states. Loss for a shareholder limited to investment in stock plus amount loaned to the corporation. Losses may be subject to "passive loss" restrictions.
Not clear yet. Probably same as for a partnership, if treated as partnership by IRS. Same as a corporation, if the LLC is treated as a corporation. If treated as a partnership, some owners may be treated like "limited partners" (not taxed).	Owner/employee of corporation pays 7.65% on his or her salary and corporation pays 7.65%. Total Social Security (FICA) tax on employer and employee is 15.3% of employee's first $62,700 of wages (in 1996). Employee and corporation each pay 1.45% on wages above $62,700.	Owner/employee of corporation pays 7.65% on his or her salary and corporation pays 7.65%. Total Social Security (FICA) tax on employer and employee is 15.3% of employee's first $62,700 of wages (in 1996). Employee and corporation each pay 1.45% on wages above $62,700.
Not clear yet, but probably none, if treated as a partnership for income tax purposes by IRS.	Yes. State and federal unemployment taxes apply to salaries paid to owners.	Yes. State and federal unemployment taxes apply to salaries paid to owners.
Not clear yet, but probably same as a partnership, if treated as a partnership by IRS.	Corporate retirement plans are no longer significantly better than Keogh plans. Deduction limits are same now as for Keogh, but participants can borrow from plan.	Plans now essentially identical to regular corporate retirement plans, except that shareholder/employee (5% shareholder) of S corporation cannot borrow from plan.
Not clear yet, but probably same as a partnership, if treated as a partnership by IRS.	Corporations may be allowed to deduct corporation medical insurance premium or reimbursements paid under medical reimbursement plan. Generally not taxable to the employee, even if employee is an owner. Similar treatment for disability and group-term life insurance plans.	Fringe benefits for 2% shareholders are deductible by corporation, but must be included in income of the shareholder who may be allowed to deduct 30% of medical insurance from adjusted gross income.
Dividends taxable to individual members, if the LLC is treated as a partnership.	Dividends are taxable to the corporation. However, 70% of the dividends received are generally free of federal income tax (unless stock is purchased with borrowed money), an important tax advantage.	Dividends taxable to individual shareholders of the S corporation, as in the case of a partnership.

Instructions for Form 2553: Sample



Department of the Treasury
Internal Revenue Service

Instructions for Form 2553

(Revised September 1993)

Election by a Small Business Corporation

Section references are to the Internal Revenue Code unless otherwise noted.

Paperwork Reduction Act Notice.—We ask for the information on this form to carry out the Internal Revenue laws of the United States. You are required to give us the information. We need it to ensure that you are complying with these laws and to allow us to figure and collect the right amount of tax.

The time needed to complete and file this form will vary depending on individual circumstances. The estimated average time is:

Recordkeeping . . . . 6 hr., 13 min.
Learning about the law or the form . . . . 2 hr., 59 min.
Preparing, copying, assembling, and sending the form to the IRS . . . . 3 hr., 13 min.

If you have comments concerning the accuracy of these time estimates or suggestions for making this form more simple, we would be happy to hear from you. You can write to both the **Internal Revenue Service**, Attention: Reports Clearance Officer, T:FP, Washington, DC 20224; and the **Office of Management and Budget**, Paperwork Reduction Project (1545-0146), Washington, DC 20503. **DO NOT** send the tax form to either of these offices. Instead, see **Where To File** below.

General Instructions

Purpose.—To elect to be an "S corporation," a corporation must file Form 2553. The election permits the income of the S corporation to be taxed to the shareholders of the corporation rather than to the corporation itself, except as provided in Subchapter S of the Code. For more information, get **Pub. 589**, Tax Information on S Corporations.

Who May Elect.—A corporation may elect to be an S corporation only if it meets all of the following tests:

1. It is a domestic corporation.

2. It has no more than 35 shareholders. A husband and wife (and their estates) are treated as one shareholder for this requirement. All other persons are treated as separate shareholders.

3. It has only individuals, estates, or certain trusts as shareholders. See the instructions for Part III regarding qualified subchapter S trusts.

4. It has no nonresident alien shareholders.

5. It has only one class of stock (disregarding differences in voting rights). Generally, a corporation is treated as having only one class of stock if all outstanding shares of the corporation's stock confer identical rights to distribution and liquidation proceeds. See Regulations section 1.1361-1(l) for more details.

6. It is not one of the following ineligible corporations:

a. A corporation that owns 80% or more of the stock of another corporation, unless the other corporation has not begun business and has no gross income;

b. A bank or thrift institution;

c. An insurance company subject to tax under the special rules of Subchapter L of the Code;

d. A corporation that has elected to be treated as a possessions corporation under section 936; or

e. A domestic international sales corporation (DISC) or former DISC.

7. It has a permitted tax year as required by section 1378 or makes a section 444 election to have a tax year other than a permitted tax year. Section 1378 defines a permitted tax year as a tax year ending December 31, or any other tax year for which the corporation establishes a business purpose to the satisfaction of the IRS. See Part II for details on requesting a fiscal tax year based on a business purpose or on making a section 444 election.

8. Each shareholder consents as explained in the instructions for Column K.

See sections 1361, 1362, and 1378 for additional information on the above tests.

Where To File.—File this election with the Internal Revenue Service Center listed below.

If the corporation's principal business, office, or agency is located in	Use the following Internal Revenue Service Center address
New Jersey, New York (New York City and counties of Nassau, Rockland, Suffolk, and Westchester)	Holtsville, NY 00501
New York (all other counties), Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	Andover, MA 05501
Illinois, Iowa, Minnesota, Missouri, Wisconsin	Kansas City, MO 64999
Delaware, District of Columbia, Maryland, Pennsylvania, Virginia	Philadelphia, PA 19255
Florida, Georgia, South Carolina	Atlanta, GA 39901
Indiana, Kentucky, Michigan, Ohio, West Virginia	Cincinnati, OH 45999
Kansas, New Mexico, Oklahoma, Texas	Austin, TX 73301
Alaska, Arizona, California (counties of Alpine, Amador, Butte, Calaveras, Colusa, Contra Costa, Del Norte, El Dorado, Glenn, Humboldt, Lake, Lassen, Marin, Mendocino, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Sierra, Siskiyou, Solano, Sonoma, Sutter, Tehama, Trinity, Yolo, and Yuba), Colorado, Idaho, Montana, Nebraska, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming	Ogden, UT 84201
California (all other counties), Hawaii	Fresno, CA 93888
Alabama, Arkansas, Louisiana, Mississippi, North Carolina, Tennessee	Memphis, TN 37501

When To Make the Election.—Complete and file Form 2553 **(a)** at any time before the 16th day of the third month of the tax year, if filed during the tax year the election is to take effect, or **(b)** at any time during the preceding tax year. An election made no later than 2 months and 15 days after the beginning of a tax year that is less than 2½ months long is treated as timely made for that tax year. An election made after the 15th day of the third month but before the end of the tax year is effective for the next year. For example, if a calendar tax year corporation makes the election in April 1994, it is effective for the corporation's 1995 calendar tax year. See section 1362(b) for more information.

Acceptance or Nonacceptance of Election.—The Service Center will notify the corporation if its election is accepted and when it will take effect. The corporation will also be notified if its election is not accepted. The corporation should generally receive a determination on its election within 60 days after it has filed Form 2553. If box Q1 in Part II is checked on page 2, the corporation will receive a ruling letter from the IRS in Washington, DC, that either approves or denies the selected tax year. When box Q1 is checked, it will generally take an additional 90 days for the Form 2553 to be accepted.

Do not file Form 1120S until the corporation is notified that its election has been accepted. If the corporation is now required to file **Form 1120**, U.S. Corporation Income Tax Return, or any other applicable tax return, continue filing it until the election takes effect.

Care should be exercised to ensure that the IRS receives the election. If the corporation is not notified of acceptance or nonacceptance of its election within 3 months

Cat. No. 49978N

Instructions for Form 2553: Sample (continued)

of date of filing (date mailed), or within 6 months if box Q1 is checked, please take follow-up action by corresponding with the Service Center where the corporation filed the election. If the IRS questions whether Form 2553 was filed, an acceptable proof of filing is: (a) certified or registered mail receipt (timely filed); (b) Form 2553 with accepted stamp; (c) Form 2553 with stamped IRS received date; or (d) IRS letter stating that Form 2553 has been accepted.

End of Election.— Once the election is made, it stays in effect for all years until it is terminated. During the 5 years after the election is terminated under section 1362(d), the corporation (or a successor corporation) can make another election on Form 2553 only with IRS consent. See Regulations section 1.1362-5 for more details.

Specific Instructions

Part I

Part I must be completed by all corporations.

Name and Address of Corporation.—Enter the true corporate name as set forth in the corporate charter or other legal document creating it. If the corporation's mailing address is the same as someone else's, such as a shareholder's, please enter "c/o" and this person's name following the name of the corporation. Include the suite, room, or other unit number after the street address. If the Post Office does not deliver to the street address and the corporation has a P.O. box, show the box number instead of the street address. If the corporation changed its name or address after applying for its EIN, be sure to check the box in item G of Part I.

Item A. Employer Identification Number.—If the corporation has applied for an employer identification number (EIN) but has not received it, enter "applied for." If the corporation does not have an EIN, it should apply for one on **Form SS-4,** Application for Employer Identification Number, available from most IRS and Social Security Administration offices.

Item D. Effective Date of Election.—Enter the beginning effective date (month, day, year) of the tax year requested for the S corporation. Generally, this will be the beginning date of the tax year for which the ending effective date is required to be shown in item I, Part I. For a new corporation (first year the corporation exists) it will generally be the date required to be shown in item H, Part I. The tax year of a new corporation starts on the date that it has shareholders, acquires assets, or begins doing business, whichever happens first. If the effective date for item D for a newly formed corporation is later than the date in item H, the corporation should file Form 1120 or Form 1120-A, for the tax period between these dates.

Column K. Shareholders' Consent Statement.—Each shareholder who owns (or is deemed to own) stock at the time the election is made must consent to the election. If the election is made during the corporation's tax year for which it first takes effect, any person who held stock at any time during the part of that year that occurs before the election is made, must consent to the election, even though the person may have sold or transferred his or her stock before the election is made. Each shareholder consents by signing and dating in column K or signing and dating a separate consent statement described below.

An election made during the first 2½ months of the tax year is effective for the following tax year if any person who held stock in the corporation during the part of the tax year before the election was made, and who did not hold stock at the time the election was made, did not consent to the election.

If a husband and wife have a community interest in the stock or in the income from it, both must consent. Each tenant in common, joint tenant, and tenant by the entirety also must consent.

A minor's consent is made by the minor or the legal representative of the minor, or by a natural or adoptive parent of the minor if no legal representative has been appointed.

The consent of an estate is made by an executor or administrator.

If stock is owned by a trust that is a qualified shareholder, the deemed owner of the trust must consent. See section 1361(c)(2) for details regarding qualified trusts that may be shareholders and rules on determining who is the deemed owner of the trust.

Continuation sheet or separate consent statement.—If you need a continuation sheet or use a separate consent statement, attach it to Form 2553. The separate consent statement must contain the name, address, and employer identification number of the corporation and the shareholder information requested in columns J through N of Part I.

If you want, you may combine all the shareholders' consents in one statement.

Column L.—Enter the number of shares of stock each shareholder owns and the dates the stock was acquired. If the election is made during the corporation's tax year for which it first takes effect, do not list the shares of stock for those shareholders who sold or transferred all of their stock before the election was made. However, these shareholders must still consent to the election for it to be effective for the tax year.

Column M.—Enter the social security number of each shareholder who is an individual. Enter the employer identification number of each shareholder that is an estate or a qualified trust.

Column N.—Enter the month and day that each shareholder's tax year ends. If a shareholder is changing his or her tax year, enter the tax year the shareholder is changing to, and attach an explanation indicating the present tax year and the basis for the change (e.g., automatic revenue procedure or letter ruling request).

If the election is made during the corporation's tax year for which it first takes effect, you do not have to enter the tax year of any shareholder who sold or transferred all of his or her stock before the election was made.

Signature.—Form 2553 must be signed by the president, treasurer, assistant treasurer, chief accounting officer, or other corporate officer (such as tax officer) authorized to sign.

Part II

Complete Part II if you selected a tax year ending on any date other than December 31 (other than a 52-53-week tax year ending with reference to the month of December).

Box P1.—Attach a statement showing separately for each month the amount of gross receipts for the most recent 47 months as required by section 4.03(3) of Revenue Procedure 87-32, 1987-2 C.B. 396. A corporation that does not have a 47-month period of gross receipts cannot establish a natural business year under section 4.01(1).

Box Q1.—For examples of an acceptable business purpose for requesting a fiscal tax year, see Revenue Ruling 87-57, 1987-2 C.B. 117.

In addition to a statement showing the business purpose for the requested fiscal year, you must attach the other information necessary to meet the ruling request requirements of Revenue Procedure 93-1, 1993-1 I.R.B. 10 (updated annually). Also attach a statement that shows separately the amount of gross receipts from sales or services (and inventory costs, if applicable) for each of the 36 months preceding the effective date of the election to be an S corporation. If the corporation has been in existence for fewer than 36 months, submit figures for the period of existence.

If you check box Q1, you must also pay a user fee of $200 (subject to change). Do not pay the fee when filing Form 2553. The Service Center will send Form 2553 to the IRS in Washington, DC, who, in turn, will notify the corporation that the fee is due. See Revenue Procedure 93-23, 1993-19 I.R.B. 6.

Box Q2.—If the corporation makes a back-up section 444 election for which it is qualified, then the election must be exercised in the event the business purpose request is not approved. Under certain circumstances, the tax year requested under the back-up section 444 election may be different than the tax year requested under business purpose. See **Form 8716,** Election To Have a Tax Year Other Than a Required Tax Year, for details on making a back-up section 444 election.

Boxes Q2 and R2.—If the corporation is not qualified to make the section 444 election after making the item Q2 back-up section 444 election or indicating its intention to make the election in item R1, and therefore it later files a calendar year return, it should write "Section 444 Election Not Made" in the top left corner of the 1st calendar year Form 1120S it files.

Part III

Certain Qualified Subchapter S Trusts (QSSTs) may make the QSST election required by section 1361(d)(2) in Part III. Part III may be used to make the QSST election only if corporate stock has been transferred to the trust on or before the date on which the corporation makes its election to be an S corporation. However, a statement can be used in lieu of Part III to make the election.

Note: *Part III may be used only in conjunction with making the Part I election (i.e., Form 2553 cannot be filed with only Part III completed).*

The deemed owner of the QSST must also consent to the S corporation election in column K, page 1, of Form 2553. See section 1361(c)(2).

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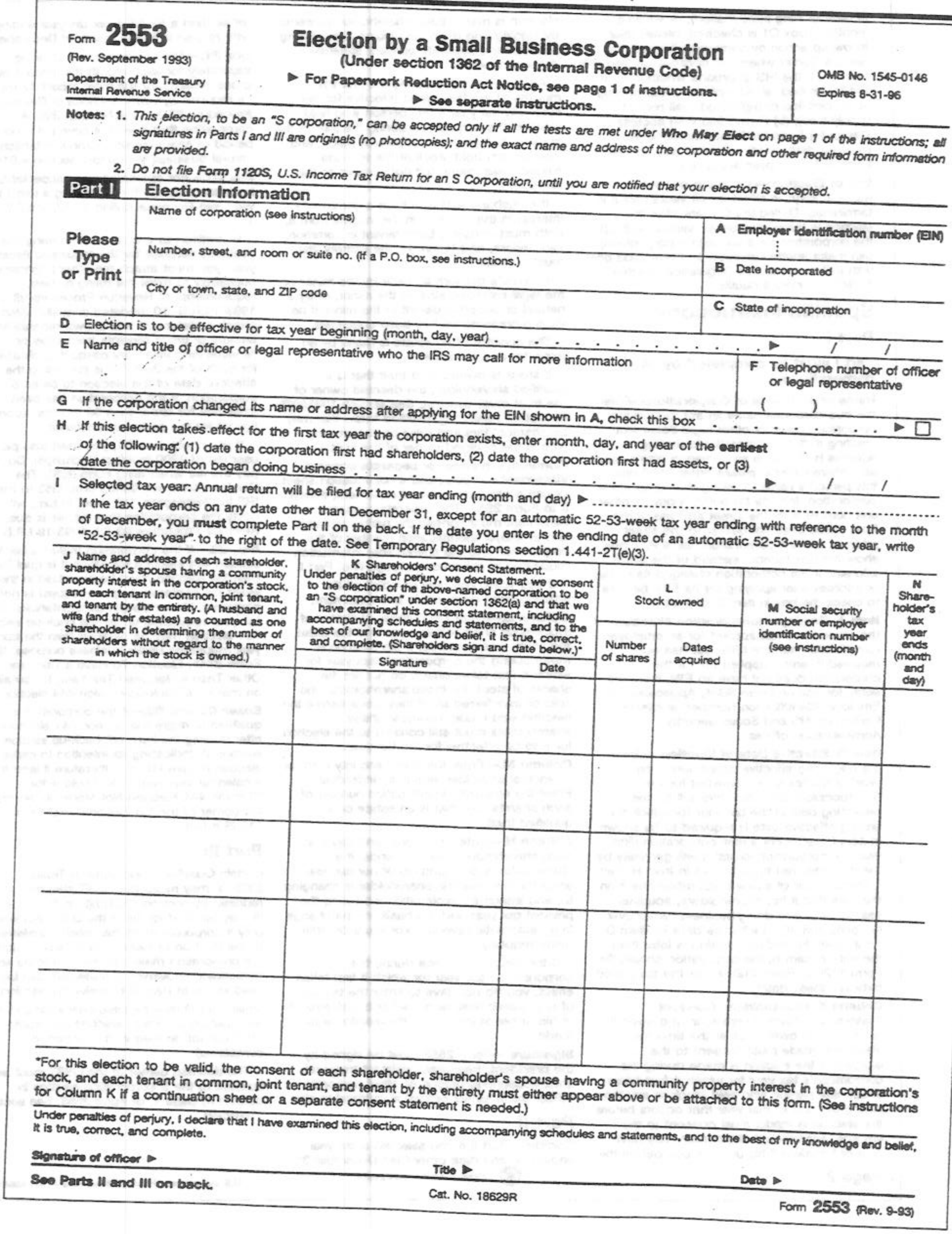
*U.S. Government Printing Office: 1993 — 301-628/80221

Form 2553 – Election by a Small Business Corporation: Sample



Form **2553**
(Rev. September 1993)
Department of the Treasury
Internal Revenue Service

Election by a Small Business Corporation
(Under section 1362 of the Internal Revenue Code)
▶ For Paperwork Reduction Act Notice, see page 1 of instructions.
▶ See separate instructions.

OMB No. 1545-0146
Expires 8-31-96

Notes: 1. *This election, to be an "S corporation," can be accepted only if all the tests are met under* **Who May Elect** *on page 1 of the instructions; all signatures in Parts I and III are originals (no photocopies); and the exact name and address of the corporation and other required form information are provided.*

2. *Do not file Form 1120S, U.S. Income Tax Return for an S Corporation, until you are notified that your election is accepted.*

Part I **Election Information**

Please Type or Print

Name of corporation (see instructions)

A Employer identification number (EIN)

Number, street, and room or suite no. (If a P.O. box, see instructions.)

B Date incorporated

City or town, state, and ZIP code

C State of incorporation

D Election is to be effective for tax year beginning (month, day, year) . . . . ▶ / /

E Name and title of officer or legal representative who the IRS may call for more information

F Telephone number of officer or legal representative ( )

G If the corporation changed its name or address after applying for the EIN shown in **A**, check this box . . . . ▶ ☐

H If this election takes effect for the first tax year the corporation exists, enter month, day, and year of the **earliest** of the following: (1) date the corporation first had shareholders, (2) date the corporation first had assets, or (3) date the corporation began doing business . . . . ▶ / /

I Selected tax year: Annual return will be filed for tax year ending (month and day) ▶ ....

If the tax year ends on any date other than December 31, except for an automatic 52-53-week tax year ending with reference to the month of December, you **must** complete Part II on the back. If the date you enter is the ending date of an automatic 52-53-week tax year, write "52-53-week year" to the right of the date. See Temporary Regulations section 1.441-2T(e)(3).

J Name and address of each shareholder, shareholder's spouse having a community property interest in the corporation's stock, and each tenant in common, joint tenant, and tenant by the entirety. (A husband and wife (and their estates) are counted as one shareholder in determining the number of shareholders without regard to the manner in which the stock is owned.)	**K** Shareholders' Consent Statement. Under penalties of perjury, we declare that we consent to the election of the above-named corporation to be an "S corporation" under section 1362(a) and that we have examined this consent statement, including accompanying schedules and statements, and to the best of our knowledge and belief, it is true, correct, and complete. (Shareholders sign and date below.)*		**L** Stock owned		**M** Social security number or employer identification number (see instructions)	**N** Shareholder's tax year ends (month and day)
	Signature	Date	Number of shares	Dates acquired		

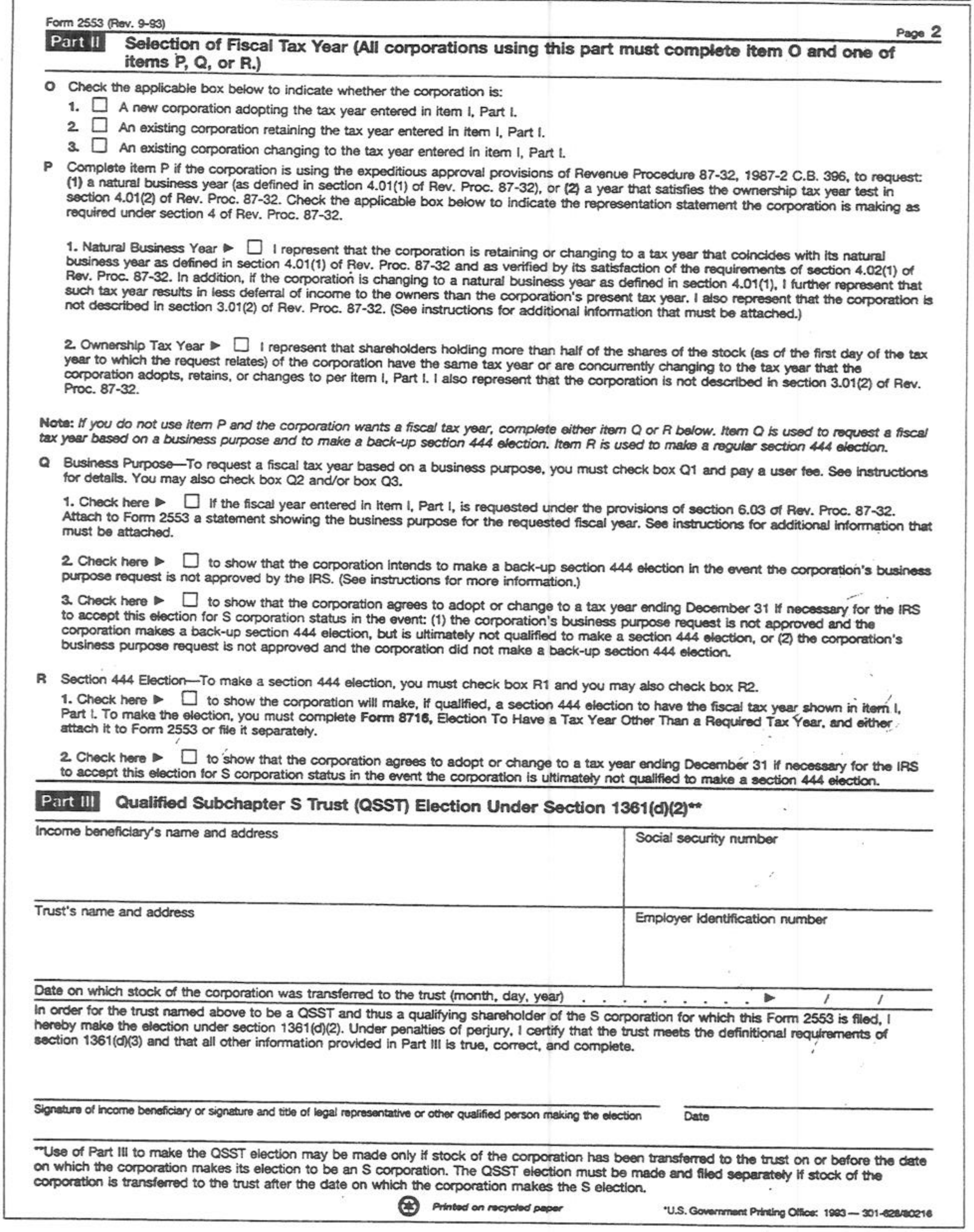
*For this election to be valid, the consent of each shareholder, shareholder's spouse having a community property interest in the corporation's stock, and each tenant in common, joint tenant, and tenant by the entirety must either appear above or be attached to this form. (See instructions for Column K if a continuation sheet or a separate consent statement is needed.)

Under penalties of perjury, I declare that I have examined this election, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete.

Signature of officer ▶ **Title ▶** **Date ▶**

See Parts II and III on back. Cat. No. 18629R Form **2553** (Rev. 9-93)

Form 2553 – Election by a Small Business Corporation: Sample (continued)



Form 2553 (Rev. 9-93) Page **2**

Part II **Selection of Fiscal Tax Year (All corporations using this part must complete item O and one of items P, Q, or R.)**

O Check the applicable box below to indicate whether the corporation is:

1. ☐ A new corporation adopting the tax year entered in item I, Part I.
2. ☐ An existing corporation retaining the tax year entered in item I, Part I.
3. ☐ An existing corporation changing to the tax year entered in item I, Part I.

P Complete item P if the corporation is using the expeditious approval provisions of Revenue Procedure 87-32, 1987-2 C.B. 396, to request: (1) a natural business year (as defined in section 4.01(1) of Rev. Proc. 87-32), or (2) a year that satisfies the ownership tax year test in section 4.01(2) of Rev. Proc. 87-32. Check the applicable box below to indicate the representation statement the corporation is making as required under section 4 of Rev. Proc. 87-32.

1. Natural Business Year ▶ ☐ I represent that the corporation is retaining or changing to a tax year that coincides with its natural business year as defined in section 4.01(1) of Rev. Proc. 87-32 and as verified by its satisfaction of the requirements of section 4.02(1) of Rev. Proc. 87-32. In addition, if the corporation is changing to a natural business year as defined in section 4.01(1), I further represent that such tax year results in less deferral of income to the owners than the corporation's present tax year. I also represent that the corporation is not described in section 3.01(2) of Rev. Proc. 87-32. (See instructions for additional information that must be attached.)

2. Ownership Tax Year ▶ ☐ I represent that shareholders holding more than half of the shares of the stock (as of the first day of the tax year to which the request relates) of the corporation have the same tax year or are concurrently changing to the tax year that the corporation adopts, retains, or changes to per item I, Part I. I also represent that the corporation is not described in section 3.01(2) of Rev. Proc. 87-32.

Note: *If you do not use item P and the corporation wants a fiscal tax year, complete either item Q or R below. Item Q is used to request a fiscal tax year based on a business purpose and to make a back-up section 444 election. Item R is used to make a regular section 444 election.*

Q Business Purpose—To request a fiscal tax year based on a business purpose, you must check box Q1 and pay a user fee. See instructions for details. You may also check box Q2 and/or box Q3.

1. Check here ▶ ☐ if the fiscal year entered in item I, Part I, is requested under the provisions of section 6.03 of Rev. Proc. 87-32. Attach to Form 2553 a statement showing the business purpose for the requested fiscal year. See instructions for additional information that must be attached.

2. Check here ▶ ☐ to show that the corporation intends to make a back-up section 444 election in the event the corporation's business purpose request is not approved by the IRS. (See instructions for more information.)

3. Check here ▶ ☐ to show that the corporation agrees to adopt or change to a tax year ending December 31 if necessary for the IRS to accept this election for S corporation status in the event: (1) the corporation's business purpose request is not approved and the corporation makes a back-up section 444 election, but is ultimately not qualified to make a section 444 election, or (2) the corporation's business purpose request is not approved and the corporation did not make a back-up section 444 election.

R Section 444 Election—To make a section 444 election, you must check box R1 and you may also check box R2.

1. Check here ▶ ☐ to show the corporation will make, if qualified, a section 444 election to have the fiscal tax year shown in item I, Part I. To make the election, you must complete **Form 8716**, Election To Have a Tax Year Other Than a Required Tax Year, and either attach it to Form 2553 or file it separately.

2. Check here ▶ ☐ to show that the corporation agrees to adopt or change to a tax year ending December 31 if necessary for the IRS to accept this election for S corporation status in the event the corporation is ultimately not qualified to make a section 444 election.

Part III **Qualified Subchapter S Trust (QSST) Election Under Section 1361(d)(2)****

Income beneficiary's name and address	Social security number
Trust's name and address	Employer identification number

Date on which stock of the corporation was transferred to the trust (month, day, year) . . . . ▶ / /

In order for the trust named above to be a QSST and thus a qualifying shareholder of the S corporation for which this Form 2553 is filed, I hereby make the election under section 1361(d)(2). Under penalties of perjury, I certify that the trust meets the definitional requirements of section 1361(d)(3) and that all other information provided in Part III is true, correct, and complete.

Signature of income beneficiary or signature and title of legal representative or other qualified person making the election Date

**Use of Part III to make the QSST election may be made only if stock of the corporation has been transferred to the trust on or before the date on which the corporation makes its election to be an S corporation. The QSST election must be made and filed separately if stock of the corporation is transferred to the trust after the date on which the corporation makes the S election.

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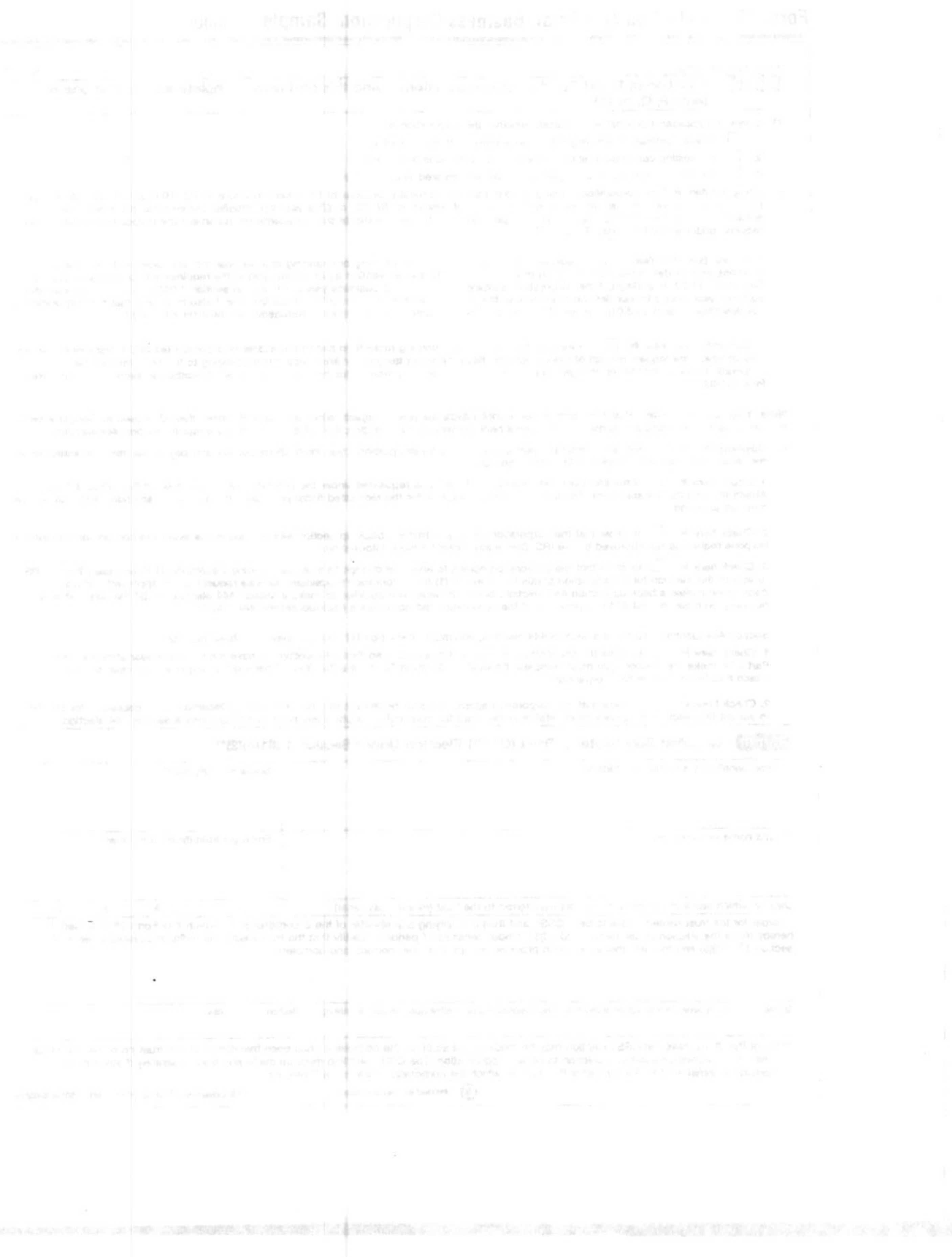

34

WHARTON REPROGRAPHICS

Protecting Your Intellectual Property

by Reed Smith Shaw & McClay LLP Intellectual Property Group

REED SMITH

In this age of high technology, business enterprises often invest heavily in acquiring or developing innovative methods designed to enhance their competitive postures. That investment can be lost if a competitor succeeds in appropriating the enterprise's products, processes or information. Protection of new technology can be achieved through patent, trademark, copyright and trade secret law.

Equally important is the protection of the employer's investment in its employees. Many employees use or have access to highly technical property, trade secrets or confidential data and may acquire technological knowledge, experience and skills on the job. The loss of such employees may damage the employer's competitive position, particularly if the product of the labor and skill of its technologically skilled employees is acquired by a competitor. An employer can protect his technological investment in employees through a written employment agreement containing a covenant not to compete along with confidentiality and assignment clauses.

Maximization of the protection afforded by patent, trademark, copyright, trade secret and restrictive covenants requires an understanding of the differences between each type of protection and the relative strengths and weaknesses of the protection afforded. The purpose of this article is to clarify the basic concepts involving each of these legal devices in order to provide a rudimentary knowledge required to differentiate those rights and avoid common pitfalls and misconceptions. Not included is a discussion of state trademark rights or the issues involved in actions to enforce the various rights.

I. Patent Rights

Patent rights are protected by the U.S. Constitution, Article I, Section 8, Clause 8, federal law, namely Title 35, United States Code, and federal court interpretations and constructions of the statutory law. Basically, a patent is a grant made by the U.S. Patent and Trademark Office upon application by an applicant (inventor) which provides for the exclusive right to make, use, sell, offer to sell and import the invention or certain of its components defined by the patent grant. The basic patent term for applications filed after June 8, 1995 is twenty years from the filing date of the application. Patents granted from applications filed prior to June 8th have terms of the greater of seventeen years from date of issuance or twenty years from the filing date. Pursuant to the Patent Code, there are three types of patents: utility, design, and plant. Each will be discussed separately below.

A utility patent, as the name implies, is granted for inventions which perform some utility, as opposed to those which are merely ornamental and, therefore, fall within the scope of design patents, or those which involve plants, and may be protected by plant patents.

A. Utility Patents

1. What Is Protected

Inventions protectable by utility patents include processes, machines, articles of manufacture, compositions of matter and improvements on any one of these. The term "process" means not only an actual process, but may also refer to an "art" or "method," or a "new use of a known process, machine, manufacture, composition of matter, or material".

A machine for purposes of patent law may include the entire machine or only one or more elements of a machine. Inventions that have been implemented in computer software can typically form the basis of either a "process" or "machine" type patent.

Articles of manufacture generally refer to products manufactured by machines. Articles of manufacture generally include all man-made items which are not found in substantially the same form in nature and which are neither machines nor compositions of matter.

Compositions of matter generally refers to new compounds created by man. These include new chemical compounds, mixtures, alloys and drugs. Improvements on such compositions or composite articles are also subject to patent protection.

An important principle of patent law relating to patentable subject matter is that abstract ideas or conceptions are not patentable. Non-patentable subject matter include methods of doing business, printed matter, scientific principles, laws of nature, mental processes, etc.

There are two parts to every patentable invention: (1) the conception, or idea, and (2) the reduction to practice. Conception is generally considered to the initial disclosure or statement of the invention. Reduction of the invention to practice may be accomplished by constructing a working model of the invention, by filing a patent application which describes the invention with particularity, or sometimes even by simply making a detailed drawing of the invention.

An important aspect of patent law involves understanding what is meant by the term "invention." The patent laws define "invention" as an "invention or discovery", which is not very helpful. Perhaps one way of comprehending what is meant by a patentable "invention" involves understanding what is not meant. When one speaks of obtaining a patent for an "invention," the invention referred to is not the physical manifestation sitting in the laboratory or on the patent attorney's desk. Such a manifestation is merely one, possibly one of many, embodiments of the "invention." Similarly, the conception or idea by itself is not the invention. Conceptions and ideas are merely the precursors to invention.

The "invention," as that term is used in patent law, is somewhere between the conception of the idea and the physical application of that idea. A patent attorney describes the invention in the specification of the patent and defines the scope of protection for that invention in the claims of the patent. Like metes and bounds in a property deed, the claims of a patent are meant to map out the boundaries of the patentee's invention. Unlike a claim to a piece of land, however, a patent claim attempts to delineate what cannot be seen or touched -- what is called the "invention."

2. Standards for Protection

To the extent that a patent allows the patentee to exclude others form making, using, selling, offering for sale or importing an invention or component, the public pays a higher price for the invention than would result with free and unfettered competition. As a result, the United States Congress set forth statutory guidelines that limit patents to those inventions truly deserving the grant. A patent will only be granted for inventions meeting the statutory requirements of utility, novelty, and non-obviousness.

a. Utility

The Patent Law limits patentable inventions to those which are "new and useful," thus creating the requirement of utility. Of the three requirements for patentability, the utility requirement is the easiest to meet. A statement of the purpose to which the invention will be put will usually suffice.

Examples of "inventions" which fail to meet the utility requirement include: new chemical compounds which have no known use; incredible inventions, such as "perpetual motion machines," which thermodynamic theory suggests are an impossibility; or other machines which fail to conform to known scientific principles, and where the applicant is unwilling or unable to demonstrate that the invention will work.

b. Novelty

The patent laws further detail those situations in which an invention will be deemed unpatentable, either because of lack of novelty, or because the inventor has lost the right to a patent through what is generally referred to as a statutory bar. The concept of novelty requires that the invention must be new; that is, that it is different from a prior device or process. If every element of the invention can be found in a single prior device or printed publication, novelty is lacking and the invention is unpatentable.

It must be noted that the inventor will not be able to patent his invention, even if otherwise patentable, if it was described in a printed publication in the United States or a foreign country or was on sale, offered for sale, or in public use in the United States for more than one year prior to the date on which the patent application was filed. This limitation is intended to encourage early disclosure of inventions, to prevent the patentee from withdrawing that which the public has justifiably come to believe has entered the public domain and to prevent the patentee from commercially exploiting his invention beyond the term of the patent grant. It should be noted that most foreign countries do not have a grace period and thus anyone contemplating filing a foreign patent must consider filing the application prior to publishing or commercializing the invention.

c. Non-Obviousness

Perhaps the most difficult area of patent law involves the concept of obviousness. A statement of the test itself is not difficult -- a patentee is not entitled to a patent on his invention if the differences between his invention and the prior art are such that at the time the invention was made the invention as a whole would have been obvious to one of ordinary skill in the art. The problem with the obviousness determination occurs in applying the concept to the facts of a given case.

The determination of obviousness is based on several factual determinations that include the scope and content of the prior art, the differences between the prior art and the patent claims at issue and the level of ordinary skill in the pertinent art. In addition, other objective indicia of non-obviousness, such as commercial success, long felt but unresolved needs and failure of others to solve the problem, need to be considered.

One must not yield to the temptation of hindsight in making the obviousness determination. Many ingenious inventions cause one to say, "that looks so simple, now why didn't I think of that?" Regardless of how obvious an invention may appear after its development, the test for obviousness as a criterion for patentability is whether the invention as a whole would have been obvious at the time the invention was made.

3. Scope of Rights

The grant of a patent gives the patentee the right to exclude others from making, using, selling, offering for sale and importing the patented invention and certain of its components in the United States for the term of the patent. This right of exclusion further extends, under certain conditions, to imported products made overseas by a U.S. patented process. A patent is thus a negative right because it is the right to exclude others.

It is important to understand that the patent does not give the patentee the right to practice his own invention. The patentee's invention may be an improvement on an earlier device which is also patented. If the claims of the prior patent are sufficiently broad, this prior patent, known as a "dominating" patent, may prevent the second patentee from practicing (i.e., making, using, selling, offering for sale or importing) his invention.
This concept is easily demonstrated in the case of the invention of the triode. In order to invent the triode, the inventor was required to experiment with and modify the diode. The diode was already the subject of a patent granted to another part. The diode patent would have prevented the inventor of the triode patent from making, using, selling, offering for sale or importing his own invention, since the triode included all the elements of the patented diode. To resolve this problem, the two inventors entered into a cross-licensing agreement, whereby each inventor was granted permission to operate under the other's patent.

4. Who Grants the Rights

Patent rights are granted exclusively by the federal government through the United States Patent and Trademark Office upon issuance of the patent.

5. Term of Rights

United States patent rights are granted for twenty years from the filing date of the application. For those applications filed prior to June 8, 1995, the applicant will have the option of selecting the 20 year term or a term of for seventeen years from the date the patent issues, which ever is longer. Prior to issuance, a patent application cannot be used to foreclose others from practicing the invention. However, patent applications are presently kept secret by the United States Patent and Trademark Office until the patent issues. Thus, during pendency of the application, the patent application may rely on trade secret protection. Upon issuance of the patent, anyone may obtain copies of the patent and its prosecution or file history.

Congress has seen fit to provide for extensions of the patent term for special classes of inventions by passing legislation designed to permit patent term extension for products, such as drugs, which must be approved by the FDA before marketing. In the past, the often time-consuming FDA approval procedure was criticized as a disincentive for the development of new drugs. For example, a new drug might not be approved by the FDA until twelve years after a patent for the drug was filed, leaving the patentee with only eight years in which to market the drug exclusively. For many companies, such a short term of effective patent protection would preclude recovery of the investment required to develop the new drug. Under these circumstances an extension of the term up to five years can be sought from the Patent and Trademark Office.

Congress has additionally seen fit to provide up to another five years of term extension, should the application be subject to a secrecy order, interference, or delays caused by the Patent and Trademark Office during appellate review.

B. Provisional Patent Applications

Commencing June 8, 1995, provisional patent applications can be filed and used to provide a priority date without diminishing the patent term. These applications are intended to place U.S. applicants on equal footing with foreign applicants and to provide a practical mechanism to reserve patent rights while exploring, e.g., licensing, fund raising, further development of the technology, etc.

The requisites for obtaining a filing date are essentially the same as for a regular patent application except that no claim, oath or declaration is required. Further, only a relatively inexpensive filing fee of $150. ($75. for small entities) is required.

Abandonment of provisional applications occurs automatically within twelve months of filing, prior to which one must convert it to a regular patent application or file another provisional application to avoid abandonment. A provisional application will not be entitled to claim the benefit of a prior filed application, and will not be examined for patentability, placed in interference, or made the subject of a statutory invention registration.

One can file a provisional application in a foreign language and early filing should be considered by foreign and multinational inventors in addition to their first filed foreign application. This procedure will sometimes eliminate potential statutory bars upon conversion of the provisional application to a regular U.S. patent application. One advantage of filing the provisional application in the U.S. simultaneously with or just after the first foreign filed application is to help avoid potential 35 U.S.C. 102(b) bars to patentability. Such bars are not avoided by relying exclusively upon obtaining the benefit of the foreign filing priority date under favorable conventions.

C. Design Patents

The statutory requirements for design patent protection are that the design be new, original, and ornamental. Additionally, design patents, like utility patents, must be non-obvious.

The critical distinction between design patents and utility patents is that of ornamentation versus functionality. As noted above, an invention must be useful in order to qualify for utility patent protection. A design, on the other hand, may not be patentable if its form is dictated solely by functional considerations. Thus, the patentability of a design is determined primarily by examining its appearance and ornamental qualities. It should be noted that an invention may support both a utility patent and a design patent.

As with utility patents, only the federal government grants design patents. However, the term for utility patents differs from design patents which remain in force for fourteen years from grant.

D. Plant Patents

New varieties of plants may also be subject to patent protection. The primary requirement for plant patent protection is that the new plant be "asexually reproducible." This means that the plant is reproduced through means other than seeds, such as through the rooting of cuttings, layering, budding or grafting. A plant patent gives the owner the right to exclude others from "asexually reproducing the plant or selling or using the plant so reproduced".

E. Common Misconceptions

Over the years a number of misconceptions concerning patent protection have persisted. One such misconception is that patent rights exist as soon as a patent application is filed. In fact, patent rights do not exist until the patent issues, which usually occurs about two to three years from the date the application is filed. Also, once the patent issues, the patent rights do not operate retroactively. Those who made, used, sold, offered to sell or imported an invention while the application was pending, but discontinued such practices upon issuance of the patent, cannot be held liable for "past" patent infringement.

Another misconception involves the effect of marking the product for which patent protection is sought. Use of "Pat. Pending" or "Pat. Applied for" is permissible once an application has been filed. As a practical matter, however, marking the product in this manner only notifies the public that a patent application is on file. Patent rights do not exist until the patent is actually granted, and marking the product with "Pat. No." prior to issuance is improper.

Yet another misconception relates to public access to patents and patent applications. Once a patent issues, anyone may obtain a copy of the patent and its prosecution history, which includes the original application, amendments, prior art cited, examiner's office actions and correspondence to and from the United States Patent and Trademark Office. However, while an application is pending, no one can gain access to the application. With few exceptions (reissue and reexamination proceedings), pending patent applications are presently kept in strict secrecy by the Patent and Trademark Office. Indeed, not only the content, but also the fact that a patent application has been filed is secret. The publication of patent applications filed in the United States is presently under consideration, however, until such considerations become law, it will only be possible to obtain information on related foreign applications in certain countries which publish patent applications for public inspection, generally eighteen months after the first filed application.

As noted earlier in the diode/triode example, a patent does not give the patentee the positive right to market or sell -- it only gives the negative right to exclude other from making, using, selling, offering for sale or importing that which is claimed in the patent.

Unlike other forms of intellectual property protection, most notably trademarks, patents cannot be renewed. The utility patent term is either seventeen years from grant or twenty years from filing and the design patent term is fourteen years from grant. Once the term expires, or if maintenance fees for utility patents are not timely paid, the public is free to practice the invention.

One misconception stemming from the advent of the provisional patent application is that its disclosure and content do not have to be as precise and exacting as a regular patent application. The fact is that unless the provisional patent application meets the statutory requirements of the patent laws, then any regular patent application attempting to benefit from the earlier filed provisional application may fail.

II. Trademark Rights

A. What is Protected

Trademark protection basically extends to trademarks and service marks. The same mark can serve both as a trademark and a service mark.

A trademark is defined as any "word, name, symbol, or device or any combination thereof adopted and used by a manufacturer or merchant to identify and distinguish his goods, including a unique product, from those manufactured or sold by others and to indicate the source of the goods, even if that source is unknown". Trade names or company names used to identify businesses are generally not considered trademarks unless also used in a true trademark sense.

A service mark is "a mark used in the sale or advertising of services to identify and distinguish the services of one person, including a unique service, from the services of others and to indicate the source of the services, even if that source is unknown". Whereas a trademark serves to identify goods, a service mark identifies services.

The scope of what can serve as a trademark or service mark is extremely broad. A recent decision of the United States Supreme Court confirms that color alone can serve as a registered trademark. Further, protection for sounds, scents and other "non-traditional" symbols have been recognized as protectable trademarks.

B. Standards for Protection

Not all trademarks are entitled to the same degree of protection. The relative degree of protection to which a trademark is entitled is generally referred to as the "strength" of the mark. The strength of the mark thus refers to the extent to which a mark can be expected to perform as a trademark by indicating a single source or origin of goods or services. Trademark strength is divided into three broad groups in descending order of strength: those marks which (1) are inherently distinctive, (2) have acquired secondary meaning, or (3) are generic. In fact, generic terms can never be trademarks, regardless of their source-indicating significance. Inherently distinctive marks are further subdivided into "arbitrary or fanciful" and "suggestive" marks. Arbitrary or fanciful marks are the strongest marks, and include coined words, or words which are not typically associated with the product. Such marks are strong because they tend not to describe the product, but rather to serve as an indicator of the source of the goods. Examples include "Kodak" for photographic supplies, "Apple" for computers, and "Exxon" for oil and gas products.

Suggestive marks are also strong marks, although not quite as strong as arbitrary or fanciful marks. Suggestive marks are those which suggest a quality or attribute of the product for which the mark is used. For example, "Coppertone," when used for suntan oil, is suggestive of a dark skin tone, the goal of consumers using the product. Similarly, "Chicken of the Sea" tuna is suggestive of seafood, and perhaps of tender white meat.

If a mark is not inherently distinctive, it cannot be given federal protection unless it has, through wide spread use and public recognition, become primarily indicative of the source of the goods, rather than the goods themselves. This is referred to in trademark law as a mark which has acquired distinctiveness, or "secondary meaning." Marks which have acquired secondary meaning are broken down into three groups: (1) descriptive marks, (2) geographic marks, and (3) surnames.

Descriptive marks are simply those which describe the product. For example "Yellow Pages" describes the yellow-colored pages of the telephone book. When the "yellow pages" were first published, they were not entitled to any trademark protection because of the descriptive quality of the term. However, after many years, consumers have come to recognize the term "Yellow Pages" as synonymous with the telephone company that publishes them. Thus, what once was a purely descriptive term has become an identification of source, and has thus acquired "secondary meaning."

Geographic marks must also have acquired secondary meaning in order for trademark protection to exist. Geographic marks simply include a geographic locale in the mark, such as "Louisville Slugger" baseball bats and "Philadelphia" brand cream cheese. Once a geographic mark has become associated with the source of the product, as opposed to the geographic locale, the mark has acquired secondary meaning.

Surnames are also entitled to trademark protection if the user can establish secondary meaning. For example, "Jim Beam" whiskey, "Calvin Klein" jeans, and "Louis Vuitton" luggage all derive from the names of the respective founders of the organizations producing those products. The names, however, are generally regarded as identifying the source of the product, rather than the name of the individual.

The third broad category of trademarks, those which are "generic", are not entitled to trademark protection, because they are so common or so descriptive that all should be free to use those terms. Examples of generic terms include "cellophane," "aspirin" and "escalator" .

C. Who Grants the Rights

Trademark rights are acquired through actual use in interstate commerce, and are not governmentally created. However, the federal government confirms trademark rights through registration, which also gives the trademark owner certain procedural and substantive advantages. Registration of a mark on the Principal Register of the United States Patent and Trademark Office is prima facie evidence of the exclusive right to use the mark throughout the United States in connection with certain products and services, is constructive notice of the registrant's claim to ownership of the mark for those products or services, and renders the mark incontestable after five years.

Despite trademark rights are based upon use, it is possible to file a federal trademark application based only upon a bona fide intent to use a mark in interstate commerce, without actual use at the time the application is filed. Once the application has been allowed by the United States Patent and Trademark Office, the applicant must submit evidence of actual use before the registration will be issued. This change in federal trademark law is to make U.S. law similar with that of most other countries. It also enables a company to obtain a registration without incurring unnecessary advertising and marketing costs.

D. Term of Rights

Unlike most other forms of intellectual property protection, trademark or service mark rights continue indefinitely, as long as the mark is used and not abandoned or does not become generic. This makes sense, because the purpose of protection is to identify the source of the goods or services. Most goods or services are manufactured, offered and sold by corporations, which theoretically have infinite lifetimes. A corporation thus has a strong interest in being able to continue to use its marks to identify itself as long as the corporation remains in business.

Formerly, registration of the mark was for an initial twenty year term which could be renewed every twenty years if the mark was still in use in interstate commerce. For registrations issued on or after November 16, 1989, the initial term is ten years and the renewal term for all marks accepted for renewal on or after that date is ten years.

E. Common Misconceptions

One prominent misconception involving trademark protection concerns use of the mark. Trademark protection simply does not exist unless and until the mark is used in conjunction with goods or services in commerce. Thus, a trademark user cannot "reserve" a trademark for future use. However, under the intent to use provisions, a limited reservation can occur. Additionally, reservation of a trade name in a state, approval by the Secretary of State of the designation as a corporate name, or filing of a fictitious name registration does not confer trademark or service mark rights.

Another misconception involves use of a surname. A person does not have an absolute right to use his or her own surname for commercial purposes. For example, Tom McDonald could not enter the fast food hamburger business and begin selling "McDonald's" hamburgers. Use of that name in conjunction with hamburgers is a trademark of the McDonald's Corporation. Were Tom McDonald permitted to begin selling his "McDonald's" hamburgers, consumers would likely be confused as to the source of "McDonald's" hamburgers. He could, however, sell "Tom McDonald's" hamburgers.

A trademark owner cannot use the notice ® on the goods or in connection with his or her services until the trademark is registered federally. The notice is not permitted to be used until after registration. Once the mark is registered, the owner of the mark has a strong incentive to place the ® adjacent the trademark, because no profits or damages can be awarded in the absence of such notice unless the infringer had actual notice of the registration. It also puts the public on notice that the mark is federally registered. Until the mark has been registered, the user should use "TM" for trademarks or "SM" for service marks. Finally, as noted earlier, unlike other forms of intellectual property protection, trademarks and service marks can exist forever, so long as they continue to be properly used with the goods and services.

III. Copyright

A. What Is Protected

Copyright protection is exclusively federal in nature. In 1976, Congress enacted a new Copyright Act, which replaced the copyright law that had been in existence since 1909. The 1976 Copyright Act, effective January 1, 1978, made some significant changes to copyright protection as it existed under the old law -- thus, old "rules of thumb" may be wrong under the law as it exists today. Further amendments to the copyright law were made when Congress enacted the Software Protection Act of 1980 which made it explicit that computer programs, are proper subject matter for copyright protection to the extent that they embody an author's original creation. In 1988 Congress passed the Berne Convention Implementation Act, effective March 1, 1989, which enabled the United States to become a signatory country to the Berne Convention for the Protection of Literary and Artistic Works, a multilateral agreement which had governed international copyright relations for more than 100 years. On December 8, 1994, the GATT (General Agreement on Trade and Tariffs Negotiations) Implementation Act was signed into law to comply with the World Trade Organization (WTO) to yet further change copyright and other intellectual property laws.

The types of works for which copyright protection is available are extremely varied. This is not surprising, given the very broad definition for protectable subject matter. Copyright protection extends to: "original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device".

More specifically, copyright protection extends to literary works, which include: books and other textual matter, such as magazine articles; computer programs and data bases; musical works, including lyrics and music to songs; dramatic works, which generally means plays; pantomimes and choreographic works, such as ballets and dances;

pictorial, graphic, and sculptural works, such as paintings, posters, maps, and; sculpture or ornamental designs of useful objects, such as lamps. Protection also extends to motion pictures and other audiovisual works and sound recordings and more recently to live musical performances.

Some of the items the copyright laws expressly exclude from protection include words, short phrases and ideas. For example, one could not obtain a copyright on a mathematical formula explained in a math text, even though the text itself would qualify for protection as a literary work.

B. Standards for Protection

The standards for copyright protection are not particularly difficult to meet. All that the statute requires is that the work be (1) original and (2) fixed in a tangible medium of expression.

A work is "original" for purposes of copyright law if it is the author's own work, as opposed to something he derived from someone else. The degree of originality required, however, is very minimal. For example, a photographer may take a breathtaking picture of Pittsburgh at night. A second photographer may come along minutes later, stand at the exact same spot, and take a second picture of Pittsburgh. Even though each picture may for all practical purposes appear identical, each photographer has taken an "original" picture for purposes of copyright law, and each picture would be capable of copyright protection.

It would, however, be a violation of the copyright laws for someone other than the original photographers to make copies of either of the copyrighted photographs. Similarly, if the second photographer simply copied the first photographer's photograph for example, by borrowing the negative, this would not qualify as an "original" work.

The second requirement for copyright protection is that the work be "fixed in a tangible medium of expression." A work is "fixed" by typing, writing, electronically recording, photographing, painting, sculpting, or any other "fixing" means. The copyright statute refers to fixation as reproduced in some tangible medium of expression so that the work has "more than transitory duration." A "tangible medium of expression" may be a piece of paper, a floppy disk, a phonorecord, a cassette tape, photographic film, canvas, clay, stone, in other words, anything in which a work may be "fixed."

C. Scope of Right

A copyright gives the owner of the work the exclusive right to copy, reproduce, distribute, publish, perform or display the work. For example, only the copyright owner of a book may make copies for sale, and only the copyright owner of a computer program may make copies of that program for sale.

The owner of the copyright also has the exclusive rights to so-called "derivative works" of the original work. For example, the author of a novel would have the exclusive right to make a motion picture based on that novel and a motion picture company wishing to make such a film would be required to purchase those rights from the author.

D. Who Grants the Rights

Copyright protection exists as soon as the work is fixed in a tangible medium of expression. Prior to publication of the work, the notice © owner/date should be applied. No specific act is required to secure protection for a work that is fixed. However, the federal government grants registration which gives some procedural advantages. A registration provides prima facie evidence of copyright validity, permits filing of an infringement action and permits an award of statutory damages and attorneys' fees in an infringement action.

E. Term of Rights

The duration of copyright protection depends upon the status of the author of the copyrighted work. Individual or joint authors are accorded protection for the author's life plus 50 years. A "work made for hire" is given protection for 75 years from the date of publication or 100 years from the date of creation, whichever expires first. A "work made for hire" is defined as a work prepared by an employee within the scope of his or her employment, or, a work prepared by a first party for a second party in which the parties agree in a written instrument signed by both parties that the work being prepared is a "work made for hire". If a work is considered to be a "work made for hire", the author is deemed at law to be either the employer or the person for whom the work was prepared, as the case may be.

As to the ownership of rights, copyright vests initially in the author(s) of the work. In the case of a "work made for hire", the employer or other person for whom the work was prepared is the author and owner of all rights.

F. Common Misconceptions

Unlike the requirements of the old Copyright Act, registration is not required for protection, as long as certain criteria are met. Protection exists as soon as the work is "fixed in a tangible medium of expression." Furthermore, it is no longer necessary under the Berne Convention for a copyright notice: ©owner/date, to be applied to a work first published after March 1, 1989, however, it is still prudent to place a copyright notice on a work as soon as possible after creation since it may deter copying and eliminate certain defenses in an infringement action such as innocent infringement which would reduce the copyright owners damages. A copyright notice is still required on works first published prior to March 1, 1989, although under certain circumstances, copyrights previously having fallen into the public domain can be restored.

Transfer of ownership of a material object in which the copyrighted work is fixed, such as a book, or floppy disk does not transfer ownership of any of the exclusive copyright rights, such as the right to reproduce copies of the book or the computer program on the disk. Likewise, the owner of a book or floppy disk can sell or otherwise dispose of that book or disk even though the copyright owner has exclusive rights of distribution.

Unlike the trademark owner, who may only use the ® notice if the mark is registered, and the patent owner, who may only give notice of his patent after issuance, the copyright owner may use the © notice even without registration. Indeed, it is advisable for the copyright notice to be placed on a work as soon as possible subsequent to creation of the work.

The copyright owner cannot extend the term of copyright protection by reprinting the copyrighted work without changes and using a later-dated copyright notice. Copyright protection exists for certain pre-defined periods described above and cannot be extended or renewed. This is different from the former 1909 Copyright Act, in which extensions were possible. However, the current copyright term is generally longer than the fifty-six year combined term available under the prior 1909 Act.

Securing patent protection for computer software together with copyrights and other protections may be the most desirable method to protect computer software. The fact that a computer software program has been granted copyright registration does not necessarily insure that complete protection of all aspects of the program has been obtained. Computer programs are in part comprised of "non-literal" aspects such as the structure, sequence and organization. These "non-literal" components may or may not be protected under copyright law depending upon whether they constitute the expression of the idea in the software program, and are thus protected, or whether they are the idea itself, which is not protected under copyright law. In copyright infringement cases, some courts have stated that the line between expression and idea may be determined by reference to the purpose the work is designed to serve; where the work is of utilitarian nature, the purpose or function of the work constitutes its idea, while everything that is not necessary to the purpose or function is part of the expression of the idea. More recent decisions however undertake a significantly more involved analysis of computer software infringement and filter out various elements of programs to determine what is and what is not protected.

IV. Semiconductor Chip Protection Act Of 1984

Semiconductor chips are small wafers of semiconductor and other material, capable of performing the function of many discrete components such as transistors, resistors and capacitors. While they are expensive to design, they can be copied easily.

A. What Is Protected

Patent, trade secret and copyright laws proved inadequate to protect against such copying. Most chips did not contain improvements that were non-obvious, trade secret laws were of no value once the chip was sold, and the Copyright Office refused to register such utilitarian objects.

The Semiconductor Chip Protection Act is a form of protection that is neither patent nor copyright, but has some features of both.
The Semiconductor Chip Protection Act of 1984 protects mask works fixed in a semiconductor chip product. A "semiconductor chip product" is one

which has a predetermined, three-dimensional pattern, intended to perform electronic circuitry functions. A "mask work" is a series of related images, however fixed or encoded, that represents the three-dimensional pattern of the various layers of the chip product.

Protection under the Chip Act gives the owner of the mask work the exclusive right to reproduce the work, to import or distribute a chip in which the mask work is embodied, and to induce or knowingly cause another person to do either of the preceding rights.

B. Standards for Protection

In order to qualify for protection under the Chip Act, the work must satisfy four requirements: (1) the work must be an original three-dimensional pattern of a mask work; (2) the work must be fixed in final or intermediate chips; (3) the work must be intended to perform electronic circuitry functions; and (4) the work must not be a staple, commonplace, or familiar design.

C. Who Grants the Rights

Under the Semiconductor Chip Act of 1984, rights in a mask work exist and are protected under federal law from the time to work is fixed. Registration of rights by the federal government is permissive under the Act, and has procedural advantages since otherwise the rights will expire after two years without registration.

D. Term of Rights

Protection of rights in a mask work commences on the earlier of the date of first commercial exploitation anywhere in the world, or the date of registration. The rights endure for ten years, to the end of the calendar year, from the date on which the protection commences. If the date of commencement is that of the first commercial exploitation, however, the rights must also be registered within two years in order to get the full ten year protection period.

VI. Trade Secrets

A. What Is Protected

There is no federal trade secret law, only state trade secret law. According to a widely accepted definition, a trade secret includes: "any formula, pattern, device or compilation of information which is used in a person's business, and which gives the person an opportunity to obtain an advantage over competitors who do not know or use it."

Another definition of "trade secret" comes from the Uniform Trade Secrets Act, adopted in a number of states, which says:

> "Trade secret" means information, including a formula, pattern, compilation, program, device, method, technique, or process, that: (1) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and (2) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

B. Standards for Protection

A variety of widely accepted factors are generally considered in making a determination concerning the existence of a trade secret. One factor involves the extent to which the information is known outside of the trade secret owner's business. If the practice for which trade secret protection is claimed has been widely used throughout the industry, there is less likelihood that a trade secret exists.

The extent to which the trade secret is known by employees and others involved in the trade secret owner's business is another important factor. The more extensive the knowledge, the less likely trade secret protection exists.

Another consideration is the extent of measures taken by the trade secret owner to guard the secrecy of the information. If the owner of the trade secret fails to take adequate precautions to protect the information asserted to be a trade secret, it is less likely that information will be accorded trade secret protection.

A further factor to be considered is the value of the information to the trade secret owner and to his competitors. By definition, a trade secret must be of some value to the owner, to the extent that it allows him to achieve an advantage over competitors. The greater this value, the greater the likelihood that trade secret protection exists.

Yet another factor considered is the amount of time, effort and money expended by the trade secret owner in developing the information. The greater these elements, the more likely trade secret protection exists.

Finally, the ease or difficulty with which the information could be independently developed or properly acquired through reverse engineering by others is important in determining the existence of a trade secret. Discovering a trade secret through reverse engineering is acceptable, provided the product or device which is being reverse engineered was not improperly obtained.

C. Who Grants the Rights

Trade secrets cannot be registered under either federal or state law. The rights arise from the actions of the trade secret owner, and are enforced according to common law tort principles.

D. Term of Rights

Trade secret protection lasts for as long as the trade secret is kept "secret" and not publicly disclosed. One of the best examples of a long-lived trade secret is the "Classic" Coca-Cola formula, which remains a trade secret today, despite many years of commercial sales and many attempts by Coke's competitors to reverse engineer the formula.

E. Common Misconceptions

The issuance of a patent eliminates any claim by the patentee to trade secret protection in the material actually disclosed by the patent. The rights in the disclosed material are then limited to those granted by the patent laws, and depend upon the scope of the patent claims.

The later availability of lawful means to gain the trade secret information obtained through a prior confidential relationship does not excuse a person's misappropriation of trade secrets because the person did not himself use those lawful means to gain the information. For example, assume Company A has a trade secret that Company B wishes to license. Company A, however, refuses to offer its trade secret for license to anyone. Company B misappropriates Company A's trade secret and Company A sues for trade secret infringement. Company B could not raise as a defense that Company A has recently granted a license for the trade secret to all who requested one. Similarly, if a trade secret invention later becomes the subject of a patent, a party who previously misappropriated the trade secret could not excuse his conduct by claiming that the trade secret has now become public by virtue of the issued patent.

Trade secret protection is the only form of intellectual property protection which extends to ideas. For protection under patent, trademark, or copyright theories, the owner must have reduced his work to some tangible form, at least by putting it in writing. This element of tangible form is not required to obtain trade secret protection.

A trade secret "legend" may, but does not necessarily, protect a trade secret. The essential inquiry is whether adequate steps were taken to ensure the secrecy of the trade secret. A typical trade secret "legend" is as follows:

"This document contains confidential and proprietary trade secret information which is the property of... Its contents may not be copied, reproduced, distributed, or otherwise disclosed without the express permission of ..."

Unlike with other forms of intellectual property protection, a notice provision is not a requirement for collecting damages for trade secret misappropriation. All that is required is that the trade secret owner take "reasonable" measures to maintain the secrecy.

VI. Trade Secrets, Confidentiality & Assignment Clauses

A. What Is Protected

Trade secret, confidentiality and assignment clauses are contractual provisions, often incorporated in a written employment agreement, to protect an employer from unauthorized use or disclosure of trade secrets or confidential information, data or material which the employee had created or had access to during employment. Trade secret and confidentiality clauses set forth broad categories of information which the employer wishes to protect and provide that the employee agrees that such information constitutes trade secrets and confidential matters and that the employee promises to maintain their confidentiality during and after the period of employment. Assignment clauses provide that the employee agrees to assign to his employer all inventions, discoveries, improvements and original works of authorship conceived or produced by him during his employment.

Under the law of all states, there is a legally recognized duty to refrain from disclosing confidential information which is the property of the employer. A written confidentiality or nondisclosure clause which is included in an employment agreement may modify this common law duty.

Some courts hold that contractual nondisclosure provisions provide no greater protection than does common law and, therefore, nondisclosure provisions may not affect the scope of information protected. Nonetheless, they perform a useful function by providing evidence of the need for such protection and a definition of the scope of confidential information in the context of that business.

Other courts have construed contractual nondisclosure provisions to provide broader or narrower protection than the common law. Nondisclosure provisions can therefore be used to contractually define a duty of nondisclosure more limited than the common law duty. Alternatively, nondisclosure provisions can be used to bring information not ordinarily considered trade secrets, such as non-specialized customer lists and other confidential business and customer information, into the realm of protected information.

B. Standards for Protection

Enforceable nondisclosure provisions must contain reasonable limitations. The protected information should be identified with reasonable specificity so as to put the employee on notice of the restriction and to avoid objections on the grounds of vagueness or over inclusiveness.

C. Who Grants the Rights

The validity and enforceability of nondisclosure and confidentiality clauses is generally controlled by common law which may vary from state to state.

D. Term of Rights

Although geographical restrictions are ordinarily inapplicable to a trade secret/confidential information provision, courts are split as to whether a time limitation is necessary. Some courts hold that where the information sought to be protected involves the secret technology of the employer, the absence of a time limitation does not per se invalidate that provision. However, where the information sought to be protected involves merchandising information, the absence of a time limitation may render the provision unreasonable.

E. Common Misconceptions

The ability to successfully assert a claim of confidentiality is largely dependent on the type of information sought to be protected. Although adequate security measures must be taken to insure the secrecy of the protected information, the fact that the materials are not marked "confidential" is not always fatal to the employer's claim. For example, blue prints and detailed manufacturing drawings have been considered prima facie trade secrets and subject to nondisclosure. On the other hand, where the information is not so clearly confidential, the employer may be required to utilize greater security measures, designed to constantly remind the employees of the confidential nature of the information.

To the extent that information represents intellectual tools of the trade or is readily ascertainable through proper means, it cannot be protected as confidential or a trade secret. Thus, a claim of confidentiality cannot be asserted to restrain a former employee from using general knowledge, skills and experience gained in the employment relationship and later used in competing with the former employer.

VII. Restrictive Covenants

A. What Is Protected

A post-employment restrictive covenant, also called a covenant not to compete, is a provision within a written employment agreement which prevents an ex-employee from entering into competition against his or her former employer for a specific period of time. A post-employment restrictive covenant is enforceable under state law by an order of court enjoining the former employee from conducting activities in violation of the covenant. An employer may also be entitled to recover money damages for an employee's breach of a post-employment restrictive covenant as an alternative or additional relief.

To justify a restrictive covenant, an employer must have an interest which the restrictive covenant may properly protect. Information not generally known in the trade (e.g., formulas, devices, processes, plans, customer lists, methods of doing business) may be a legitimate protectable interest. A protectable interest may also be found where the employee has received specialized training or has developed the capability of rendering specialized services. In most states, the customer relations are recognized as a legitimate business interest protectable by a covenant not to compete.

B. Standards for Protection

A covenant not to compete typically prohibits the departing employee from selling the same products or providing the same services as those of his former employer within a particular area for a certain period of time after the employment ends. A covenant not to compete may also prohibit a seller of a business from competing with the buyer in such a way as to injure the value of the business sold.

A covenant not to compete will not be enforced by a court unless restrictions upon the employee are reasonably limited in terms of geography, activities and time. The reasonableness of the restrictions is determined by weighing the necessity for protection of the employer against the hardship imposed on the employee.

Factors considered in determining the employer's need for protection include: the risk of the employer losing customers; the extent of participation by the employer and employee in securing and retaining customers; whether there is any exploitation of personal contacts between the employer and the customers; the existence of a directory of general knowledge pertaining to a list of customers; the nature and extent of the business position held by the employee; and the good faith of the employer in dealing with the employee.

Factors considered in assessing the hardship imposed on the employee include: the inequality in bargaining power between the employer and employee; whether the employee is an unskilled worker whose services are not unique; the employee's training, health and education; the needs of the employee's family; the current conditions of employment; and the necessity for the employee to change his calling or residence.

C. Who Grants the Rights

The validity and enforceability of restrictive covenants is controlled by common law which may vary from state to state. Additionally, some states have adopted statutory laws relating to the enforceability of restrictive covenants.

D. Term of Rights

Generally, a covenant not to compete is more easily enforceable if the geographic limitation is tied to the territory or customers actually serviced by the employee during employment, or to the information or technology disclosed to the employee. The scope of a covenant not to compete should be limited to those activities of the employee which would pose a legitimate threat to the employer. The duration of a covenant should be only as long as is needed for the risk of injury to the employer by the ex-employee to be reasonably moderated. In most states, a covenant barring an ex-employee from competing for a period of two years is considered reasonable.

E. Common Misconceptions

Some employers refrain from requesting that the employee sign a covenant not to compete at the time of hiring, believing that a covenant not to compete can be signed at a later time if it appears to be necessary. However, in many states, a restrictive covenant signed after work commences is not enforceable.

To be enforceable, a restrictive covenant must be ancillary to an employment agreement. Generally, this requires that the restrictive covenant must be entered into at the time of initial employment and must be supported by sufficient consideration, or a bargained-for exchange. The mere continuation of the employment at the time the restrictive covenant is signed often is not sufficient consideration to support a restrictive covenant.

In many states, the employee must receive some additional benefit or compensation, such as a promotion and/or raise, in return for signing the covenant after the employee has been on the job, or else the covenant will not be enforceable. When the contract is being signed by an existing employee, it should state the additional benefits the employee is receiving in exchange for agreeing to the covenant.

Another common misconception is that it is better to draft a covenant not to compete that is overly broad and overly restrictive since the covenant will be at least partially enforceable in a court of law, if not fully enforceable. To the contrary, an overly broad covenant may be totally invalidated since some states require covenants to be reasonable as written and will not grant partial enforcement. Even in those states which permit partial enforcement, courts generally will not reform a covenant that is unconscionably over-broad. Therefore, an employer must take care to impose no greater restrictions than are necessary to protect the legitimate business interests of the employer.

Finally, some employers believe that in absence of written covenant not to compete, the employer has no right to restrain an employee from competing with the employer. To the contrary, the employee has a common law duty to exercise the utmost good faith and loyalty toward his employer. During the course of his employment, an employee cannot compete with his employer and cannot misappropriate confidential materials or business opportunities. However, an at-will employee is generally entitled to resign from his or her position and pursue his or her chosen field of endeavor in direct competition with his or her previous employer so long as there is no breach of a pre-resignation fiduciary or common law duty, nor misappropriation of trade secret or confidential information.

XIII. Conclusion

This article is not intended to be all-inclusive; it is merely an overview of many issues that can arise in connection with the use of patents, trademarks, copyrights, trade secrets, clauses relating to trade secrets, confidential information and assignment of rights, and restrictive covenants in protecting technological investments. You should consult counsel to determine the specific issues which should be considered on the basis of the particular facts and circumstances of the technology involved.

If you have any questions, or want to know how these laws will impact you and your particular circumstances, call Louis M. Heidelberger at (215) 851-8270, John W. Goldschmidt, Jr. at (215) 851-8226 or Daniel H. Golub at (215) 851-8268 or any member of the Reed Smith Shaw & McClay Intellectual Property Group for assistance.

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WHARTON REPROGRAPHICS

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DEAL STRUCTURE

A critical aspect of the entrepreneur's attempt to obtain resources is the development of an actual "deal" with the owner of the resources. Typically, the entrepreneur needs a variety of resources, including dollars, people, and outside expertise. As in any situation, the individual who desires to own, or use, these resources must give up something. Because the entrepreneur typically has so little to start with, s/he will usually give up a claim on some future value in exchange for the ability to use these resources now.

Entrepreneurs can obtain funds in the form of trade credit, short- and long-term debt, and equity or risk capital. This note will focus on the structure and terms of the deal which may be used to obtain the required financial resources from investors. The note will center on financial resources because raising capital is a common problem which virtually all entrepreneurs face.

WHAT IS A "DEAL"?

In general, a deal represents the terms of a transaction between two (or more) groups or individuals. Entrepreneurs want money to use in a (hopefully) productive venture, and individuals and institutions wish to earn a return on the cash that they have at risk.

The entrepreneur's key task is to make the whole equal to more than the sum of the parts. That is, to carve up the economic benefits of the venture into pieces which meet the needs of particular financial backers. The entrepreneur can maximize his/her own return by selling these pieces at the highest possible price, that is, to individuals who demand the lowest return. And the individuals who demand the lowest return will typically be those that perceive the lowest risk.

This note was prepared by Associates Fellow Michael J. Roberts, under the supervision of Professor Howard H. Stevenson, as the basis for class discussion.

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THE DEAL

In order to craft a deal which maximizes his/her own economic return, the entrepreneur must

- understand the fundamental economic nature of the business;
- understand financiers' needs, and perceptions of risk and reward;
- understand his/her own needs and requirements.

Understanding the Business

The first thing the entrepreneur must do is assess the fundamental economic nature of the business itself. Most business plans project a set of economics which determine

- the amount of funds required
  - the absolute amount
  - the timing of these requirements;
- the riskiness of the venture
  - the absolute level of risk
  - the factors which determine risk;
- the timing and potential magnitude of returns.

It is important to remember that the venture itself does not necessarily have an inherent set of economics. The entrepreneur determines the fundamental economics when s/he makes critical decisions about the business. Still, there may be certain economic characteristics which are a function of the industry and environment, and which the entrepreneur will generally be guided by.

For instance, a venture such as a genetics engineering firm has a much different set of characteristics than a real estate deal. The genetics firm may require large investments over the first several years, followed by years with zero cash flow, followed by a huge potential return many years out. The real estate project, on the other hand, may require a one-time investment, generate immediate cash flow, and provide a means of exit only several years down the road.

One technique for understanding a venture's economic nature is to analyze the potential source of return. Let's take this example--a paint business with the following projected cash flows:

Year	0	1	2	3	4	5
Cash flow ($000)	(1,000)	400	400	400	400	5,600

Now, we can break this cash flow down into its components.

- investment: money required to find the venture;
- tax consequences: not precisely a cash flow, but nonetheless a cash benefit which may accrue if an investment has operating losses in the early years;
- free cash flow: cash which the business throws off is a result of its operations before financing and distributions to providers of capital;
- terminal value: the after-tax cash which the business returns as a result of its sale. Here, this is assumed to occur at the end of year 5.

Let's assume that these flows are as follows:

Cash Flows ($000)	Year 0	1	2	3	4	5
Original investment	(1,000)					
Tax consequences		300	300	0	(100)	(200)
Free cash flows		100	100	400	500	800
Terminal value (after tax)						5,000
Total	(1,000)	400	400	400	400	5,600

Now, we can take the IRR of the total investment = 64.5%.

Next, we calculate the present value of each of the individual elements of the return at that IRR, and then, the percent which each element contributes to the total return. Of course, the present value of the total return will be equal to the original investment

Element	Present Value @ 64.5% ($000)	% of Total
Tax consequences	263	26.3
Free cash flows	322	32.2
+ Terminal value	415	41.5
Total	$1,000	100.0%

This analysis illuminates the potential sources of return inherent in the business, as projected.

Now, the task of the entrepreneur is to carve up the cash flows and returns and sell them to the individuals/institutions that are willing to accept the lowest return. This will leave the biggest piece of the economic pie for the entrepreneur. To do so requires an understanding of the financiers' needs and perceptions.

Understanding Financiers

Providers of capital clearly desire a "good" return on their money, but their needs and priorities are far more complex. Exhibit 1 in Chapter 4 depicts some of the differences which exist among different financial sources. They vary along a number of dimensions, including

- magnitude of return desired
- magnitude and nature of risk which is acceptable
- perception of risk and reward
- magnitude of investment
- timing of return
- form of return
- degree of control
- mechanisms for control

And the priorities attached to these various elements may differ widely. For instance, certain institutions (e.g., insurance companies, pension funds) have legal standards which determine the type of investment which they can undertake. For others, the time horizon for their return may be influenced by organizational or legal constraints.

Certain investors may want a high rate of return and be willing to wait a long period, and bear a large amount of risk to get it. Still other investors may consider any type of investment, as long as there exists some mechanism for them to exert their own control over the venture. To the extent that the entrepreneur is able to break down the basic value of the business into components which vary along each of these dimensions, and then find investors who want this specific package, the entrepreneurs will be able to structure a better transaction: a deal which creates more value for him/herself.

If we return to our example of the paint business which requires a $1 million investment, we can see how the entrepreneur can take advantage of these differences in investor characteristics.

- The tax benefits, for example, are well-suited for sale to a risk-averse wealthy individual in a high marginal tax bracket. Because the benefits accrue as a result of operating losses, if the business does poorly, the tax benefits may be even greater. But let's assume that a wealthy individual believes that these forecasts are realistic, and requires a 25% return. If we discount the tax benefits at this 25% required return, we arrive at a present value of $325,500. Therefore, this individual should be willing to invest $325,500 in order to purchase this portion of the cash flows.
- The operating cash flows would, in total, be perceived as fairly risky. However, some portion of them should be viewed as a "safe bet" by a bank. Let's assume that the entrepreneur could convince a banker that no less than $60,000 would be available in any given year for interest

expenses. Further, if the banker were willing to accept 12.0% interest and take all of the principal repayment at the end of year 5 (when the business is sold), then s/he should be willing to provide 60,000 ÷ .12 = $500,000 in the form of a loan.

Now, the entrepreneur has raised $825,500 and needs only $174,500 to get into business.

- The terminal value, and the riskier portion of the operating cash flows, remain to be sold. Let's assume that a venture investor would be willing to provide funds at a 50% rate of return.

First, we need to see precisely what cash flows remain:

Year	1	2	3	4	5
Total	400	400	400	400	5,600
- Wealthy investor	300	300	0	(100)	(200)
- Bank	60	60	60	60	560
= Remaining	40	40	340	440	5,240

Now, the remaining cash flows in years 1 through 5 have a present value, at the venture firm's 50% rate, of $922,140. Now, if we need $174,500, we need to give up $174,500 ÷ $922,140 = 18.9% of these flows in order to entice the venture investor to provide risk capital.

This leaves the entrepreneur with a significant portion of the above "remaining" flows. One can see how these differences in needs and perceived risk allow the entrepreneur to create value for him/herself.

Understanding the Entrepreneur's Own Needs

The example we have just worked through was based on the assumption that the entrepreneur wants to obtain funds at the lowest possible cost. While this is generally true, there are often other mitigating factors.

The entrepreneur's needs and priorities do vary across a number of aspects including the time horizon for involvement in the venture, nature of that involvement, degree of business risk, etc. All of these variables will affect the entrepreneur's choice of a venture to pursue. However, once the entrepreneur has decided to embark on a particular business, his/her needs and priorities with respect to the financing of the venture will vary with respect to

- degree of control desired
- mechanisms of control desired

- amount of financing required
- magnitude of financial return desired
- degree of risk which is acceptable

For instance, in the above example, the entrepreneur could have decided to obtain an additional $100,000 or $200,000 as a cushion to make the venture less risky. This would certainly have lowered the economic return, but might have made the entrepreneur more comfortable with the venture.

Similarly, the bank which offered funds at 12%, or the venture investor, might have imposed a series of very restrictive covenants. Rather than accept this loss of control, the entrepreneur might rather have given up more of the economic potential.

In addition, the entrepreneur may need more than just money. There are times when some investor's money is better than others. This occurs in situations where once an individual is tied into a venture financially, s/he has an incentive to help the entrepreneur in nonfinancial ways. For instance, an entrepreneur starting a business which depended on securing good retail locations would prefer to obtain financing from an individual with good real estate contacts than from someone without those contacts. Venture capital firms are frequently cited for providing advice and support in addition to financing.

THE VEHICLES

Once the fundamental economics of a deal have been worked out, the entrepreneur must still structure the deal. This requires the use of a certain legal form of organization, and a certain set of securities.

The vehicles through which the entrepreneur can raise capital include the general partnership, the limited partnership, the S corporation, and the corporation. While these forms of organization differ with respect to their tax consequences, they also differ substantially in regards to the precision with which cash flows may be carved up and returned to various investors. In a limited partnership, for instance, virtually any distribution of profits and cash flow is feasible so long as it is spelled out clearly, and in advance in the limited partnership agreement. (Losses, however, are usually distributed in proportion to capital provided.) In an S corporation, on the other hand, where only one class of stock is permitted, investors can get a return in the form of tax losses which can be passed through, but founder's stock is equivalent to investors' stock and it is difficult to draw any distinctions in the returns which accrue to the two groups.

Securities can involve debt, warrants, straight or preferred equity, and a host of other legal arrangements. The structuring of securities requires the assistance of good legal counsel, with an eye towards securities and corporate law, as well as an intimate knowledge of the tax code.

SUMMARY

In the previous piece, we looked at alternative sources of financing. Here, we've attempted to describe how the entrepreneur can structure a deal with these potential sources of capital. A well-structured deal will provide the financier with his/her desired return and still create substantial value for the entrepreneur.

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WHARTON REPROGRAPHICS

CASE—MICHIGAN LIGHTING, INC.

Preparation Questions

1. Evaluate the company. How much do you believe the company is worth? Bring to class a written bid of how much you would pay for it if you were Scott and Peterson.
2. What should they do to resolve the ownership situation?
3. How would you finance the purchase of the company?
4. Assume you do purchase the company: What specific actions would you plan to take on the first day? By the end of the first week? By the end of six months? Explain how and why.

MICHIGAN LIGHTING, INC.

Jack Peterson was discouraged by the continuing conflicts with his partner, David Scott, and had sought advice on how to remedy the situation from friends and associates as early as 1976. In 1984, Jack was beginning to believe that he and David had just grown too far apart to continue together. Jack had to find a mutually agreeable way to accomplish a separation. One alternative was for one partner to buy the other out, but they would first have to agree on this and find an acceptable method. David seemed to have no interest in such an arrangement.

During 1984, the differences between the partners grew. The vacillations in leadership were disruptive to the operation and made the employees very uncomfortable.

By early 1985, the situation was growing unbearable. Jack recalled the executive committee's annual planning meeting in January:

> It was a total disaster. There were loud arguments and violent disagreements. It was so bad that no one wanted to ever participate in another meeting. We were all miserable.
>
> What was so difficult was that each of us truly thought he was right. On various occasions other people in the company would support each of our positions. These were normally honest differences of opinion, but politics also started to enter in.

Company Description

Michigan Lighting, Inc. (MLI), manufactures custom-engineered fluorescent lighting fixtures used for commercial and institutional applications. Sales in 1985 were approximately $4.4 million with profits of $115,000.

Most sales are for standard items within the nine major lines of products designed and offered by the company. Ten percent of sales are completely custom-designed or custom-built fixtures, and 15 percent of orders are for slightly modified versions of a standard product. In 1985, CFI shipped 66,000 fixtures. Although individual orders range from one unit to over 2,000 units, the average order size is approximately 15–20 fixtures. Modified and custom-designed fixtures average about 25 per order. Jack Peterson, MLI president, describes their market position:

> Our product-marketing strategy is to try to solve lighting problems for architects and engineers. We design products which are architecturally styled for specific types of building constructions. If an architect has an unusual lighting problem, we design a special fixture to fit his needs. Or if he designs a lighting fixture, we build it to his specifications. We try to find products that satisfy particular lighting needs that are not filled by the giant fixture manufacturers. We look for niches in the marketplace.
>
> Having the right product to fit the architect's particular needs is the most important thing to our customer. Second is the relationship that the architect, the consulting engineer, or the lighting designer has with the people who are representing us. The construction business is such that the architect, engineer, contractor, distributor, and manufacturer all have to work as a team together on a specified project to ensure its successful completion. The architect makes a lot of mistakes in every building he designs, unless he just designs the same one over and over. Consequently, there's a lot of trading that goes on during the construction of a building, and everybody's got to give and take a little to get the job done. Then the owner usually gets a satisfactory job and the contractors and manufacturers make a fair profit. It requires a cooperative effort.
>
> Most of our bids for orders are probably compared with bids from half a dozen other firms across the country. Since a higher percentage of our orders are for premium-priced products, we are not as price sensitive as producers of more commonplace lighting fixtures. It is difficult for a small firm to compete in that market. As many as 30 companies might bid on one standard fixture job.

MLI owns its own modern manufacturing facility, located outside Pontiac, Michigan. Production consists of stamping, cutting, and forming sheet metal; painting; and assembling the fixture with the electrical components which are purchased from outside suppliers. The company employs a total of 104 workers, with 34 people in sales, engineering, and administration, and another 70 in production and assembly.

The company sells nationwide through regional distributors to contractors and architects for new buildings and renovations. Prior to 1983, MLI sold primarily to a regional

Exhibit A
Historical Performance

Year	*Net Sales*	*Profit after Tax*	*No. of Fixtures Shipped*	*Total Employees*	*Hourly Employees*
1985	$4,412,191	$115,209	66,000	104	70
1984	3,573,579	101,013	58,000	94	58
1983	2,973,780	106,528	52,000	82	52
1982	2,935,721	63,416	54,000	82	50

market. At that time, marketing activities were broadened geographically. This is the primary reason that sales have been increasing over the last few years even during a weak construction market. (See *Exhibit A* for historical sales, earnings, unit sales, and employment.)

Background

Michigan Lighting, Inc., was formed in Flint, Michigan, in 1936 by Daniel Peterson and Julian Walters. Each owned one-half of the company. Peterson was responsible for finance and engineering and Walters for sales and design. They subcontracted all manufacturing for the lighting systems they sold.

After several years, differences in personal work habits led Peterson to buy out Walters' interest. Daniel Peterson then brought in Richard Scott as his new partner. Scott had been one of his sheet metal subcontractors. Richard Scott became president and Daniel Peterson treasurer. Ownership was split so that Peterson retained a few shares more than half and all voting control because of his prior experience with the company.

In 1940, MLI began manufacturing and moved its operations to a multifloor 50,000-square-foot plant also located in Flint. The company grew and was quite profitable during the war years and during the following boom in construction of the early 1950s. Peterson and Scott were quite satisfied with the earnings they had amassed during this period and were content to let the company remain at a steady level of about $1 million in sales and about $15,000 in profit after taxes.

Daniel Peterson's son, Jack, joined MLI as a salesman in 1963 after graduating from MIT and then Colorado Business School. Richard Scott's son, David, who was a graduate of Trinity College, became an MLI salesman in 1964 when he was discharged from the service. The two sons were acquaintances from occasional gatherings as they were growing up but had not been close friends.

In 1966, Daniel Peterson had a heart attack and withdrew from management of the business. Although he remained an interested observer and sometime advisor to his son, Daniel was inactive in company affairs after this time. Richard Scott assumed overall responsibility for the management of the company.

Jack Peterson moved inside to learn about other parts of the company in 1967. His first work assignments were in manufacturing and sales service. David Scott joined his father in the manufacturing area a year later. Jack Peterson became sales manager, David Scott became manufacturing manager, and, at Richard Scott's suggestion, another person was added as financial manager. These three shared responsibility for running the company and worked well together, but major decisions were still reserved for Richard Scott, who spent less and less time in the office.

As the new group began revitalizing the company, a number of employees who had not been productive and were not responding to change were given early retirement or asked to leave. When the man who had been Richard Scott's chief aide could not work with the three younger managers, they ultimately decided he had to be discharged. Richard Scott became so angry that he rarely entered the plant again.

For several years the three managers guided the company as a team. However, there were some spirited discussions over the basic strategic view of the company. As sales manager, Jack Peterson pressed for responding to special customer needs. This, he felt, would be their strongest market niche. David Scott argued for smooth production flows and less disruption. He felt they could compete well in the "semistandard" market.

In 1968, Jack Peterson began to work with an individual in forming a company in the computer field. The company rented extra space from MLI, and MLI provided management and administrative support, helping the new company with bidding and keeping track of contracts. Although David Scott was not active in this company, Jack split his partial ownership in this new company with David because they were partners, and because Jack was spending time away from MLI with the computer company.

In 1969, the fathers moved to restructure the company's ownership to reflect the de facto changes in management. The fathers converted their ownership to nonvoting class A stock, and then each transferred 44 percent of their nonvoting stock to their sons. Daniel Peterson decided to relinquish his voting control at this time in an effort to help things work as the new generation took over. Accordingly, Jack Peterson and David Scott were each issued 50 percent of the class B voting shares.

Due to the demands associated with the start-up of the computer company, this new effort began to weaken the relationship between Jack and David. At the same time, David and the financial manager began to have strong disagreements. These seemed to arise primarily from errors in cost analysis, which led the financial manager to question some of David's decisions. There were also differences of opinion over relations with the workforce and consistency of policy. David preferred to control the manufacturing operation in his own way. Jack felt David could be more consistent, less arbitrary, and more supportive of the workforce. When the computer company was sold in 1975, the financial manager joined it as treasurer and resigned from MLI.

Growing Conflict

The departure of the financial manager led to a worsening of the relationship between Jack and David. Jack had been made company president in 1970. Jack recalled the decision:

> "Richard Scott had resigned as president and the three of us were sitting around talking about who should be president. David Scott finally said, 'I think you should be it.' And I said, 'Okay.' "

Yet even after Jack became president, the three managers had really operated together as a team for major decisions. Now, Jack was upset that they had lost an excellent financial manager, someone critical to the operation (partially due, in his opinion, to the disagreements with David). Also, there was no longer a third opinion to help resolve conflicts. Although the financial manager was replaced with an old classmate of David's, the new manager became one of several middle-level managers who had been hired as the company grew.

The pressure of growth created more strains between Jack and David. Sales had reached $1.8 million and had begun to tax MLI's manufacturing capacity. Jack felt that some of the problems could be alleviated if David would change methods that had been acceptable during slacker periods but hindered intense production efforts. David had different views. Both, however, agreed to look for additional space.

The transition to a new factory outside Pontiac, Michigan, in 1977 eased the stresses between the partners. A major corporation had purchased an indirect competitor to obtain its product lines and sold MLI the 135,000-square-foot plant. MLI also entered into an agreement to manufacture some of the other company's light fixtures as a subcontractor. The plant was in poor condition, and David Scott took over the project of renovating it and continuing production of the other company's lines.

Jack Peterson remained in Flint running the MLI operation alone until such time as it became possible to consolidate the entire operation in Pontiac. Jack described this interlude:

> The next year was a sort of cooling-off period. David was immersed in the project with the new factory and I was busy with the continuing operation. David had always enjoyed projects of this sort and was quite satisfied with this arrangement.
>
> Then, in 1978, we hired a plant manager to run the Pontiac plant and David came back to work in Flint. By that time, of course, a lot of things had changed. All of Flint had been reporting to me. I had somewhat reshaped the operation and the people had gotten used to my management style, which was different from David's.
>
> David's reaction was to work primarily with the design and engineering people, but he really wasn't involved very much with the daily manufacturing anymore. He developed a lot of outside interests, business and recreation, that took up much of his time.
>
> I was very happy with the arrangement because it lessened the number of conflicts. But when he did come back, the disagreements that did rise would be worse. I guess I resented his attempts to change things when he only spent a small amount of his time in the company.
>
> Then, in 1980, we made the decision to sell the Flint plant and put the whole company in Pontiac. We were both involved in that. Most of the key people went with us. David and I were very active in pulling together the two groups, and in integrating the operations.
>
> That began a fairly good time. I was spending my time with the sales manager trying to change the company from a regional company to a national one and was helping to find new representatives all over the country. David Scott spent his time in the engineering, design, and manufacturing areas. There was plenty of extra capacity in the new plant, so things went quite smoothly. In particular, David did an excellent job in upgrading the quality standards of the production force we had acquired with the plant. This was critical for our line of products and our quality reputation.
>
> This move really absorbed us for almost two years. It just took us a long time to get people working together and to produce at the quality level and rate we wanted. We had purchased the plant for an excellent price with a lot of new equipment and had started deleting marginal product lines as we expanded nationally. The company became much more profitable.

During the company's expansion, a group of six people formed the operating team. David Scott concentrated on applications engineering for custom fixtures and new product design. In addition, there was a sales manager, financial manager, engineering manager, the plant manufacturing manager, and Jack Peterson. Disagreements began again. Jack recounted the problems:

> Our operating group would meet on a weekly or biweekly basis, whatever was necessary. Then we would have monthly executive committee meetings for broader planning issues. These became a disaster. David had reached the point where he didn't like much of anything that was going on in the company and was becoming very critical. I disagreed with him, as did the other managers on most occasions. Tempers often flared and David became more and more isolated.
>
> He and I also began to disagree over which topics we should discuss with the group. I felt that some areas were best discussed between the two of us, particularly matters concerning personnel, and that other matters should be left for stockholders meetings. The committee meetings were becoming real battles.

In 1977, Richard Scott died. Although he had remained chairman of the board, he had generally been inactive in the company since 1968. Daniel and Jack Peterson and David Scott remained as the only directors.

Search for a Solution

When Jack Peterson returned from a summer vacation in August 1985, he was greeted by a string of complaints from several of MLI's sales agents and also from some managers. Jack decided that the problem had to be resolved. Jack sought an intermediary:

> I knew that David and I weren't communicating and that I had to find a mediator David trusted. I had discussed this before with Allen Burke, our accountant. He was actually far more than our accountant. Allen is a partner with a Big Six accounting firm and is active in working with smaller companies. Allen was a boyhood friend who had grown up with David. I felt he had very high integrity and was very smart. David trusted him totally and Allen was probably one of David's major advisors about things.
>
> When I first talked to Burke in March, he basically said, "Well, you have problems in a marriage and you make it work. Go make it work, Jack." He wasn't going to listen much.
>
> Then in early September, I went back to say that it wasn't going to work anymore. I asked him for his help. Allen said that David had also seen him to complain about the problems, so Allen knew that the situation had become intolerable.

Both directly and through Burke, Jack pressured David to agree to a meeting to resolve the situation. Although David was also unhappy about their conflicts, he was hesitant to meet until he had thought through his options.

Jack felt that there were several principal reasons for David's reluctance to meet. Since they couldn't seem to solve their differences, the alternative of having one of them leave the company or become a silent partner glared as a possibility. Jack knew that David's only work experience was with MLI and was limited primarily to managing manufacturing operations he had known for years. Second, Jack thought that David was very uncertain about financial analysis, in which he had little training. Because he had not been directly involved in the financial operations, he was not aware of all the financial implications of his decisions. Jack felt that this made David's task of weighing the pros and cons of alternative courses of action much more difficult. Finally, there was the emotional tie to the company and the desire to avoid such a momentous decision.

As discussion began to result in the possibility that the partners would sell the company, David's reluctance waxed and waned. Just before Thanksgiving, David called Jack, who was sick at home, and said he had decided to fire the financial manager and become the treasurer of the company. David wanted to look at the figures for a year or so, and then he would be able to make a better decision. Jack felt that the financial manager was essential and could not be discharged. He thought that this was really more of an attempt to buy time. After some discussion, Jack convinced David that the financial manager should be retained.

After another month of give and take, Jack and David realized that they had no estimate of the value of the company if it were to be sold. Both felt that this might alter the attractiveness of the alternatives that each was considering.

Valuing the Company

Before making his decision, Jack reviewed the thinking he had done since first considering the idea of buying or selling the company. He began with the company's current position. With the serious discussions going on about the buyout agreement, preparation of the financial statements for 1985 had been accelerated and they were already completed. (These are shown, together with the results of 1984 and 1983, as *Exhibits B* and *C*.)

Jack had also begun developing the bank support he might need to fund a buyout. The company's banker indicated that he would loan Jack funds secured by his other personal

Exhibit B
Financial Statements

Statement of Earnings

	Year Ended December 31		
	1985	*1984*	*1983*
Net sales	$4,412,191	$3,573,579	$2,973,780
Costs of goods sold:			
Inventories at beginning of year	742,907	593,185	416,512
Purchases	1,599,426	1,275,665	1,109,781
Freight in	19,520	26,595	20,966
Direct labor	430,154	360,568	328,487
Manufacturing expenses	977,229	802,172	673,643
	3,769,236	3,058,185	2,549,389
Inventories at end of year	826,228	742,907	593,185
	2,943,008	2,315,278	1,956,204
Gross profit	1,469,183	1,285,301	1,017,576
Product development expenses	131,746	128,809	102,299
Selling and administrative expenses	1,112,542	915,140	740,801
	1,244,288	1,043,949	843,100
Operating income	224,895	214,352	174,476
Other expense (income):			
Interest expense	56,259	37,790	32,416
Payments to retired employee	10,000	10,000	20,000
Miscellaneous	(923)	(1,551)	(6,193)
	65,336	46,239	46,223
Earnings before income taxes	159,559	168,113	128,253
Provision for income taxes	44,350	67,100	49,000
Earnings before extraordinary income	115,209	101,013	79,253
Extraordinary income—life insurance proceeds in excess of cash surrender value			27,275
Net earnings	$115,209	$101,013	$106,528
Earnings per share of common stock	$19.15	$16.79	$13.17

assets if Jack was the buyer, but that since he had not worked with David, the bank would decline to finance an acquisition with David as the buyer. In addition, the bank would continue the company's existing line of credit, which was secured by MLI's cash and accounts receivable. The maximum which could be borrowed with this line was an amount equal to 100 percent of cash plus 75 percent of receivables. Both types of borrowing would be at one percent over the prime rate (then about 9 percent).

Jack worked with the financial manager to develop financial projections and valuation assessments. To be conservative, Jack had made the sales projections about 10 percent lower each year than he really thought they would achieve. Because fixed costs would not rise appreciably with modest increases in sales, any improvements in sales volume would directly increase profits. He felt he should consider how these various changes would impact his financing requirements and his assessment.

Jack also had sought out common valuation techniques. By looking through business periodicals and talking to friends, he found that these methods were not necessarily precise. Private manufacturing companies were most often valued at between 5 and 10 times after tax earnings. Book net asset value also helped establish business worth, but was often adjusted to reflect differences between the market value of assets and the carrying values

Exhibit B *(continued)*

	December 31		
Assets	*1985*	*1984*	*1983*
Current assets:			
Cash	$51,248	$3,778	$70,520
Accounts receivable:			
Customers	600,361	430,750	318,356
Refundable income taxes	23,001		
Other		2,276	5,289
	623,362	433,026	323,645
Less allowance for doubtful receivables	3,500	3,500	3,500
	619,862	429,526	320,145
Inventories:			
Raw materials	291,790	259,550	277,072
Work in progress	534,438	483,357	316,113
	826,228	742;907	593,185
Prepaid insurance and other	14,208	20,134	26,070
Total current assets	1,511,366	1,196,345	1,009,920
Property, plant, and equipment:			
Buildings and improvements	341,426	325,686	295,130
Machinery and equipment	210,493	173,073	135,419
Motor vehicles	32,578	32,578	29,421
Office equipment	42,866	43,905	36,949
	627,363	575,242	496,919
Less accumulated depreciation	273,284	233,444	185,215
	354,079	341,798	311,704
Land	11,101	11,101	11,101
	365,180	352,899	322,805
Other assets:			
Cash surrender value of life insurance policies (less loans of $19,478 in 1985, $19,590 in 1984, and $19,432 in 1983)	81,978	77,215	72,569
Total assets	$1,958,524	$1,626,459	$1,405,294

(Continued)

shown on balance sheets. For MLI, this was significant because they had obtained their new plant at an excellent price. Jack felt that it alone was probably worth $200,000 more than the stated book value.

To Jack, the variations in worth suggested by these different methods not only reflected the uncertainty of financial valuation techniques but also showed that a business had different values to different people. His estimate would have to incorporate other, more personal and subjective elements.

Personal Financial Considerations

One important consideration was what amount of personal resource each could and should put at risk. Both Jack and David were financially very conservative. Neither of them had ever had any personal long-term debt—even for a house. Jack could gather a maximum of $650,000 of assets outside of MLI that could be pledged to secure borrowing. His bank had already confirmed that he could borrow against those assets. However, for him to put his entire worth at risk to purchase David's share of the company, he would want to be very comfortable that the price was a reasonable one. Jack described his feelings: "You get very

Exhibit B *(continued)*

	December 31		
	1985	*1984*	*1983*
Liabilities and Stockholders' Equity			
Current liabilities:			
Current maturities of long-term debt	$12,184	$10,558	$9,000
Note payable—bank	325,000	200,000	
Note payable—officer		30,000	39,000
Accounts payable	389,582	295,208	313,203
Amount due for purchase of treasury stock			75,000
Accrued liabilities	154,590	116,134	88,957
Total current liabilities	881,356	651,900	525,160
Long-term debt	176,522	189,122	195,710
Stockholders' Equity			
Contributed capital:			
6% cumulative preferred stock—authorized 10,000 shares of $10 per value; issued 2,000 shares	20,000	20,000	20,000
Common stock:			
Class A (nonvoting):			
Authorized 15,000 shares of $10 par value; issued 8,305 shares	83,050	83,050	83,050
Class B (voting):			
Authorized 5,000 shares of $10 par value; issued and outstanding 20 shares	200	200	200
	103,250	103,250	103,250
Retained earnings	892,396	777,187	676,174
	995,646	880,437	779,424
Less shares reacquired and held in treasury—at cost:			
2,000 shares 6% cumulative preferred stock	20,000	20,000	20,000
2,308 shares Class A common stock	75,000	75,000	75,000
	95000	95,000	95,000
	900,646	785,437	684,424
Total liabilities and stockholders' equity	$1,958,524	$1,626,459	$1,405,294

protective about what you have outside the company. The problem you always have with a small company is that most of your worth is tied up in it and you may have very little to fall back on if something goes sour. We both have never been big leverage buyers or anything like that."

Besides the element of increased financial risk, there were several other considerations that tempered Jack's willingness to pay a very high price. Since they had moved to the plant in Pontiac, the one-hour commute to work had been a bit burdensome. It would be nice not to have that drive. Jack also felt that he had good experience in the overall management of a business and his engineering undergraduate degree and MBA gave him a certain amount of flexibility in the job market. This was important because, for both financial and personal reasons, he felt he would still have to work if he was no longer associated with MLI.

On the other hand, some factors encouraged Jack to be aggressive. His father cautioned him to be reasonable, but Jack knew his father would be very disappointed if he lost the company, and Jack himself had strong emotional ties to MLI. Jack also developed a point of view that in some ways he was buying the entire company, rather than just half: "I'm sitting here with a company that I have no control over because of our disagreements. If I buy the other half share, I'm buying the whole company—I'm buying peace of mind, I could do what

Exhibit B *(concluded)*

Statement of Changes in Financial Position

	Year Ended December 31 1985	1984	1983
Working capital provided:			
From operations:			
Earnings before extraordinary income	$115,209	$101,013	$ 79,253
Add depreciation not requiring outlay of working capital	55,978	50,658	44,267
Working capital provided from operation	171,187	151,671	123,520
Extraordinary income from life insurance proceeds			27,275
Capitalized equipment lease obligation		5,295	
Proceeds from cash surrender value of life insurance policies			51,877
Total working capital provided	171,187	156,966	202,672
Working capital applied:			
Additions to property, plant, and equipment	68,259	80,752	47,107
Increase in cash surrender value of life insurance policies—net of loans	4,763	4,646	5,954
Reduction of long-term debt	12,600	11,883	8,995
Purchase of 2,308 shares of nonvoting Class A stock			75,000
Total working capital applied	85,622	97,281	137,057
Increase in working capital	$ 85,565	$ 59,685	$ 65,615
Net change in working capital consists of:			
Increase (decrease) in current assets:			
Cash	$ 47,470	$(66,742)	$ 64,854
Accounts receivable—net	190,336	109,381	(3,548)
Inventories	83,321	149,722	176,673
Prepaid expenses	(6,106)	(5,936)	(4,980)
	315,021	186,425	232,999
Increase (decrease) in current liabilities:			
Current portion of long-term debt	1,626	1,558	500
Note payable to bank	125,000	200,000	
Note payable to officer	(30,000)	(9,000)	
Accounts payable	94,374	(17,995)	104,083
Amount due for purchase of treasury stock		(75,000)	75,000
Contribution to profit-sharing trust			(20,000)
Accrued liabilities	38,456	27,177	7,801
Total	229,456	126,740	167,384
Increase in working capital	85,565	59,685	65,615
Working capital at beginning of year	544,445	484,760	419,145
Working capital at end of year	$630,010	$544,445	$484,760

I want, I wouldn't have to argue. So I'd buy a 'whole peace of mind' if I bought the other half of the company."

Finally, Jack considered his competitive position versus David. Although David had not accumulated the personal resources that Jack had, he had a brother-in-law with a private company that Jack knew had the ability to match Jack's resources and might be willing to back David financially. The brother-in-law would also be giving David financial advice in evaluating his alternatives and setting a value for the company. David also probably had fewer job prospects if he sold out. His undergraduate study was in liberal arts and his entire experience was within MLI. Jack also thought David might have some doubts abut his ability to manage the company on his own.

Exhibit C
Pro Forma Financial Statements

Income Statement Projections (prepared by Jack Peterson)

Historical Percentages			*Projected Percentages*				*Thousands of Dollars*		
1983	*1984*	*1985*	*1986*	*1987*	*1988*		*1986*	*1987*	*1988*
100.00	100.00	100.00	100.0	100.0	100.0	Net sales	$4,800	$5,100	$5,400
65.80	64.79	66.70	67.0	67.0	67.0	Cost of goods sold	3,216	3,417	3,618
34.22	35.21	33.30	33.0	33.0	33.0	Gross income	1,584	1,683	1,782
28.61	29.28	28.25	28.0*	28.0	28.0	Operating, general, and admin.	1,344	1,428	1,512
5.61	5.93	5.05	5.0	5.0	5.0	Profit before taxes	240	255	270
38.20	39.90	27.80	39.0†	39.0	39.0	Taxes	94	99	105
						Net earnings	$ 146	$ 156	$ 165

*Projected percentages reflect an assumption that one partner will leave the company, and include a $25,000 cost reduction for the reduced salary requirements of a replacement.

†Effective tax rate.

The Meeting

After another conversation with Allen Burke, David Scott called Jack Peterson at home one evening: "Jack, I realize that you're right—I can't live in this tense environment any longer. I've spoken with Allen, and he has agreed to meet with both of us to discuss our situation, and to attempt to identify some possible solutions. Would Friday at 9:00 be convenient for you?"

[illegible]

[illegible]

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ALTERNATIVE SOURCES OF FINANCING

One of the most common issues which an entrepreneur faces revolves around securing financing for the venture. The questions of how and when to raise money and from whom are frequent topics of concern. This piece will attempt to describe some common sources of capital, and the conditions under which money is typically lent or invested. "Deal Structure" discusses the specific terms and pricing of capital.

AN OVERVIEW

As in most transactions, the owners of capital expect to get something in return for providing financing for the venture. In evaluating potential opportunities, the providers of funds will typically use some form of a risk/return model. That is, they will demand a higher return when they perceive a higher risk.

The entrepreneur's objective, of course, is to secure financing at the lowest possible cost. The art of successful financing, therefore, lies in obtaining funds in a manner which those providers of funds view as relatively less risky.

The entrepreneur can do several things to structure the financing so it will be perceived as "less risky":

- pledge personal or corporate assets against a loan.
- promise to pay the money back in a short period of time, when the investors can judge the health of the business, rather than over the long term, when its financial strength is less certain.
- give investors some measure of control over the business, either through loan covenants or participation in management (i.e., a seat on the board).

Note that these are only a few of the possible mechanisms.

This case was prepared by Associates Fellow Michael J. Roberts, under the supervision of Professor Howard H. Stevenson, as the basis for classroom discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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The liabilities side of the balance sheet itself provides a good overview of the potential sources of financing. Because this side of the balance sheet is arranged in order of increasing risk, it follows that the lowest cost forms of financing will usually be available from the higher balance sheet items.

START-UP FINANCING

Start-up financing provides the entrepreneur with a host of unique challenges. The highest risk capital (and therefore potentially highest return capital) is at the bottom of the balance sheet as equity. When a business is in the start-up phase, it is at its riskiest point. Therefore, equity capital is usually an appropriate source of financing during this period. That is not to say that debt capital is unattractive. It may even be available when secured by assets of the business, such as a building or equipment. However, some equity is usually required to get a business "off the ground." There is virtually no getting around the fact that the first investment in the business will be equity capital. This is required to demonstrate commitment on the part of the entrepreneur. Investors perceive, and rightly so, that the individual entrepreneur will be more committed to the venture if s/he has a substantial portion of personal assets invested in the venture. It is this fact which has led some to claim that: "You're better off trying to start a business with $5,000 than with $100,000 in personal resources. If you are relatively poor, you can demonstrate your commitment for a smaller sum." This statement presumes that you will be seeking capital from some outside source. If you were going to fund the venture all by yourself, you would naturally prefer to have $100,000 instead of $5,000.

There is another, more practical reason why this start-up phase will usually be financed with the entrepreneur's own funds. In order to raise money, you typically need more than an idea. The entrepreneur will have to invest some money in the idea, perhaps to build a prototype or do a market study, in order to convince potential providers of capital that the idea has potential.

This is not to say that these funds must be equity capital in the purest sense. That is, the money need only be equity from the point of view of potential investors in the business. The entrepreneur can obtain these "equity funds" by mortgaging personal assets like a house or car, borrowing from friends or relatives, even from a personal bank loan or credit card advances. The important fact is that when the money goes into the business, it does so as equity, not as debt to be repaid to the entrepreneur.

Some specialized firms provide "seed capital." Most venture capital firms require that a business move beyond the idea stage before they will consider financing it. Yet, some businesses require a good deal of work, and money, to get from the concept phase to the point where they can obtain venture capital financing. These seed funds can provide this kind of capital.

OUTSIDE EQUITY CAPITAL

Typically, the entrepreneur will exhaust his/her own funds before the business is a viable operation. At this point, it is usually still too early to obtain all of the required financing in the form of debt. The entrepreneur must approach outside sources for equity capital.

Private Investors

One popular source of equity capital is private investors, also known as "wealthy individuals." These investors may range from family and friends with a few extra dollars to extremely wealthy individuals who manage their own money. Doctors frequently come to mind, and do, in fact, represent a significant source of private equity capital. Wealthy individuals may be advised by their accountants, lawyers or other professionals, and the entrepreneur must deal with these people as well.

In order to approach wealthy individuals, you will usually need at least a business plan. A formal offering memorandum has the advantage of providing more legal protection for the entrepreneur in the form of disclaimers and legal language. However, it suffers from appearing overly negative, being more costly to prepare (usually requires legal counsel) and also being limited by the SEC laws in terms of its distribution. That is, some of the SEC rules permit only 35 "offerees." With a business plan, you can exceed this number, and then formally "offer" to only those individuals who have a real interest in investing.

One of the best ways to find wealthy investors is through a network of friends, acquaintances and advisors. For instance, if you have used a local lawyer and accountant to help you prepare a business plan or offering document, these advisors may know of wealthy individuals who invest in ventures like yours.

At this point, it is worth reiterating the importance of following the securities laws and obtaining the advice of counsel. Because many of these wealthy individuals are "unsophisticated" they can (and often do, if the venture is unsuccessful) claim that they were misled by you, the conniving entrepreneur. A carefully drawn offering document is the key to legal protection in this instance.

Wealthy investors may be well-suited to participation in equity financings that are too small for a venture capital firm to consider (e.g., under $500,000). Wealthy investors are also typically thought of as being a less expensive source of equity than venture capital firms. This may be true. It is also true that:

- wealthy individuals do not often possess the expertise or time to advise the entrepreneur on the operations of the business.

- wealthy investors are far less likely to come up with additional funds if required.

- these investors are more likely to be a source of "problems" or frustration, particularly if there are a large number of them. Phoning frequently, or complaining when things are not going according to plan, they can create headaches for even the most well-intentioned of entrepreneurs.

Venture Capital

Venture capital refers to a pool of equity capital which is professionally managed. Wealthy individuals invest in this fund as limited partners, and the general partners manage the pool in exchange for a fee and a percentage of the gain on investments.

In order to compensate for the riskiness of their investments, give their own investors a handsome return, and make a profit for themselves, venture firms seek a high rate of return on their investments. Target returns of 50% or 60% are not uncommon hurdles for firms to apply to prospective venture capital investments.

In exchange for this high return, venture firms will often provide advice to their portfolio companies. These people have been through many times what the entrepreneur is usually experiencing for the first time. They can can often provide useful counsel on the problems a company may experience in the start-up phase.

Venture firms can differ along several dimensions. Some prefer investing in certain kinds of companies, "hi-tech" is popular with most, although perceptions of what precisely this is will vary widely. Some firms have a reputation for being very involved with the day-to-day operations of the business; others exhibit a more hands-off policy.

In approaching venture capitalists, the entrepreneur needs a business plan to capture the firm's interest. Here the document serves a far different purpose than it would in the case of wealthy individuals. A venture capital firm will expend a good deal of effort investigating potential investments. Not only is this sound business practice on their part, but they have legal obligations to their own investors.

Therefore, a business plan targeted to venture firms should be short, concise and attempt to stimulate further interest, rather than present the business in exhaustive detail.

Most venture capitalists also report that it is only the naive entrepreneur who will propose the actual terms of the investment in the initial document. While the plan should certainly spell out how much financing the entrepreneur is seeking, to detail the terms (i.e., "for 28% of the stock...") is viewed as premature for an initial presentation.

One topic which is frequently of concern to entrepreneurs is confidentiality. On the one hand, it seems wise to tell potential investors about your good ideas to get them interested in the company; on the other, what if someone else takes them? In general, venture capitalists are a professional group, and will not disclose confidential information. It is more difficult, however, to make this statement about private sources of capital, like wealthy individuals.

Whatever the target investor audience, it is generally not a good idea to put truly proprietary material in a business plan. These plans are frequently copied, and could certainly be left accidentally on a plane or in an office. A business plan might, for example, describe the functions a new product would perform, but should probably not include circuit designs, engineering, drawings, etc.

Venture firms may not invest via a pure equity security. Some may invest a package of debt and equity, convertible debt or convertible preferred. Each of these has its advantages.

- a debt/equity package provides for the venture firm to get some of its funds back via interest, which is deductible to the company, and hence results in a tax savings.
- convertible debt or preferred gives the venture firm a liquidation preference. If venture should fail, the venture capitalist will have a priority claim on the assets of the business.

Venture firms will usually "syndicate" a large investment. That is, they will attempt to interest other firms in taking a piece of the investment. This permits the firm to invest in a larger number of companies, and thus spread its risk. This is particularly important on subsequent "rounds" or stages of financing. Other venture firms will want to see that the original firm(s) will continue their investment in the company. If existing, more knowledgeable investors aren't interested in the company, why should a new venture firm be interested?

Public Equity Markets

Of course, the largest source of equity capital remains the public equity markets: The New York, American and over-the-counter stock exchanges. Typically, however, a firm must have a history of successful operation before it can raise money in this way. In "hot" markets, some smaller, start-up companies have been able to raise public equity. The process is lengthy, detailed and expensive. See "Securities Law and Going Public" for a discussion of the public equity markets.

Whether the investment is made by wealthy individuals or a venture capital firm, terms will have to be negotiated. In exchange for their investment, the investor will receive a "security" which represents the terms of his/her investment in the company. In the case of a public offering, the investment bank negotiates the terms on behalf of its clients. Venture capital firms, and investment banks, of course, tend to be more sophisticated than the average wealthy investor.

DEBT CAPITAL

The other large category of capital is debt. Debt is presumed to be lower risk capital because it is repaid according a set schedule of principal and interest.

In order to have a reasonable expectation of being paid according to this schedule, creditors lend against:

- Assets: Firms can obtain asset-based financing for most hard assets which have a market value. A building, equipment, or soluble inventory are all assets which a company could borrow against.
- Cash flow: Lenders will allow firms to borrow against their expected ability to generate the cash to repay the loan. Creditors attempt to check this ability through such measures as interest coverage (EBIT ÷ interest payments) or debt/equity ratio. Obviously, a healthy business with little debt and high cash flow will have an easier time borrowing money than a new venture.

Cash Flow Financing

Cash flow or unsecured financing is of several types, and can come from different sources.

- Short-term debt: Short-term unsecured financing is frequently available to cover seasonal working capital needs, for periods of less than one year, usually 30 to 40 days.
- Line-of-credit financing: A company can arrange for a line of credit, to be drawn upon as needed. Interest is paid on the outstanding principal, and a "commitment fee" is paid up front. Generally, a line of credit must be "paid-down" to an agreed-upon level at some point during the year.
- Long-term debt: Generally available to solid "creditworthy" companies, long-term debt may be available for up to 10 years. Long-term debt is usually repaid according to a fixed schedule of interest and principal.

Cash flow financing is most commonly available from commercial banks, but can also be obtained from savings and loan institutions, finance companies and other institutional lenders (i.e., insurance companies, pension funds). Because cash-flow financing is generally riskier than asset-based financing, banks will frequently attempt to reduce their risk through the use of covenants. These covenants place certain restrictions on a business if it wishes to maintain its credit with the bank. Typical loan covenants concern:

- limits on the company's debt/equity ratio
- minimum standards on interest coverage
- lower limits on working capital
- minimum cash balance
- restrictions on the company's ability to issue senior debt.

These, and other covenants, attempt to protect the lender from actions which would increase the likelihood of the bank's not getting its money back.

Asset-Based Financing

Most assets in a business can be financed. Because cash-flow financing usually requires an earnings history, far more new ventures are able to obtain asset-based financing. In an asset-based financing, the company pledges or gives the financier a first lien on the asset. In the event of a default on the financing payments, the lender can repossess the asset. The following types of financing are generally available:

- Accounts receivable: Up to 90% of the accounts receivable from creditworthy customers can usually be financed. The bank will conduct a thorough investigation to determine which accounts are eligible for this kind of financing. In some industries, such as the government business, accounts receivable are often "factored." A factor buys approved receivables for a discount from their face value, but collects from the accounts.

- Inventory: Inventory is often financed if it consists of merchandise which could be easily sold. Typically, 50% or so of finished goods inventory can be financed.

- Equipment: Equipment can usually be financed for a period of 3 to 10 years. One-half to 80% of the value of the equipment can be financed, depending on the saleability or "liquidity" of the assets. Leasing is also a form of equipment financing, where the company never takes ownership of the equipment, but rents it.

- Real estate: Mortgage financing is usually readily available to finance a company's plant or buildings; 75% to 85% of the value of the building is a typical figure.

- Personally secured loans: A business can obtain virtually any amount of financing if one of its principals (or someone else) is willing to pledge a sufficient amount of assets to guarantee the loan.

- Letter-of-Credit financing: A letter of credit is a bank guarantee which a company can obtain to enable it to purchase goods. A letter of credit functions almost like a credit card, allowing businesses to make commitments and purchases in other parts of the world where the company does not have relationships with local banks.

- Government Secured Loans: Certain government agencies will guarantee loans to allow businesses to obtain financing when they could not obtain it on their own. The Small Business Administration, the Farmers Home Administration, and other government agencies will guarantee bank loans.

Asset-based financing is available from commercial banks and other financial institutions. Insurance companies, pension funds, and commercial finance companies provide mortgages and other forms of asset-backed financing. Entrepreneurs themselves can also provide debt capital to a business once it has passed out of the risky start-up period.

INTERNALLY GENERATED FINANCING

A final category of financing is internally generated. This term describes:

- Credit from suppliers: Paying bills in a less timely fashion is one way to increase working capital. Sometimes, suppliers will charge you interest for this practice. In other instances, the costs may be more severe if a key supplier resource decides to stop serving you.

- Accounts receivable: Collecting bills more quickly will also generate financing.

- Reducing working capital: A business can generate internal financing by reducing other working capital items: inventory, cash, etc.

- Sale of assets: Perhaps a more drastic move, selling assets will also generate capital.

Each of these techniques represents an approach to generating funds internally, without the help of a financial partner. Although the purely financial costs are low, the entrepreneur must be wary of attempting to run the business "too lean."

SUMMARY

We've attempted to describe the spectrum of financial sources which an entrepreneur can tap both during the start-up phase and as a going concern. Exhibit 1 is an attempt to summarize these sources. Along the horizontal axis, we've tried to note whether the provider of capital tries to manage the risk/reward ratio by 1) increasing reward by raising the cost of funds, or 2) decreasing risk by asserting some measure of control over the business. This is not an exhaustive list, but an overview of the most popular sources. In every case, there is a high premium on understanding both your own needs and the specific needs of the financier.

Exhibit 1

ALTERNATIVE SOURCES OF FINANCING

	COST							CONTROL		
		Fixed Rate		Floating Rate		% of Profits	Equity	Covenants	Voting Rights	Guarantee of Debt
SOURCE OF FINANCING	Zero	ST	LT	ST	LT					
Self			X				X		X	X
Family and Friends		X	X				X		X	X
Suppliers and Trade Credit	X	X				X				
Commercial Banks		X		X				X		X
Other Commercial Lenders		X	X		X			X		X
Asset-based Lenders/ Lessors			X					X		
Specialized Finance Cos.		X	X					X		
Institutions and Insurance Companies			X		X	X		X		
Pension Funds			X			X		X		
Venture Capital		X	X				X		X	
Private Equity Placements							X			
Public Equity Offerings						X	X			
Government Agencies (SBIC)			X		X	X				X
Other Government Programs			X					X		X

We've got people with the knowledge, the dream, and the education. And the money has been there. The public has been financing them. There will be more of that. The 1946 crop of baby boomers hit 50 this year. They make more of their own investment decisions, and they are inclined to buy smaller companies. The NASDAQ volume exceeds the New York Stock Exchange volume on certain days. As public vehicles, those companies will have a better ability to get ahead. If they need additional capital and they are performing, they can raise it in 10 days. And they can use different tools to do that: additional equity, convertible debentures, straight debt. We're going to see more of those companies continue to grow, and some of them are really going to break out. It's wonderful.

—Muriel Siebert, founder of Muriel Siebert & Co., a national discount brokerage firm with headquarters in New York City, and the first woman to own a seat on the New York Stock Exchange

I expect more start-ups will be merged with larger companies because they will not have the staying power to become big companies by themselves. I don't expect to see many new companies joining the ranks of Hewlett-Packard, Intel, or Microsoft. What could change my opinion is an invention of the magnitude of the steam engine or the electric motor. The last such invention was the transistor in 1948.

—Arthur Rock, principal of Arthur Rock & Co., a venture-capital firm in San Francisco

MURIEL SIEBERT

Keep Your Eye on the Angels

BILL WETZEL, director emeritus, Center for Venture Research, University of New Hampshire, Durham, N.H.

All the attention that's being paid to the availability of credit for small businesses is going to fade, and we're going to have to pay a lot more attention to the availability of early-stage risk capital. Entrepreneurs just don't fit into what debt providers are designed to do. And venture-capital funds have left the start-up field, particularly when we're talking about less than $1 million.

But one of the real changes is going to be the enormous explosion in the participation of private *equity* investors in emerging companies. Those private equity investors are the self-made entrepreneurs of the past generation. For the past 10 years I've followed the *Forbes* 400 richest people in the United States. In 1984 something in the neighborhood of 40% of the *Forbes* 400 were described as self-made megamillionaires—or what you might call "first-generation money." By 1994 that number had doubled.

The capital and know-how of our country's self-made millionaires are two of our least understood and largely untapped economic resources. Self-made entrepreneurs love to nurture other entrepreneurs. And they typically bring their know-how as well as their capital to the table. In many cases that know-how is more powerful in building a company than the capital itself.

The participation of the growing population of "angels" is going to become more visible. The market mechanism right now for angel financing is really very inefficient and random: who knows whom, who mentioned something on the golf course, who talked to his or her accountant lately about who's looking for money. That marketplace is also horribly time-consuming. Next to capital, time is the scarcest resource entrepreneurs have.

ILLUSTRATION: JOHN DYKES

My Life as an Angel

It took me many tries, but I finally figured out how to get what I want out of new-venture investing • *By Norm Brodsky, with Bo Burlingham*

WE SET ANOTHER RECORD LAST WEDNESDAY. I called the restaurant at 10:30 p.m., as I do every evening, and David answered with his usual, "Hi, Norm." He doesn't even bother to ask who's calling anymore. At 10:30 he knows it's me. He told me we'd served 145 meals for dinner, beating the old record by 8, and I felt the same charge I'd feel if it were my own business.

Of course, it's not my own business. Or rather it is, and it isn't. I'm the investor and the adviser, and I own 100% of the stock. But David Schneider is the entrepreneur. He's the one who came up with the concept, found the location, put the operation together, and is making it go. When he pays back my initial investment, he'll become the majority shareholder as well.

In the meantime I'm having a ball. I go to the restaurant at least once or twice a week. If there's room, I sit at a table. If not, I eat at the bar. I like to watch the action and talk to the customers. Five women were finishing lunch there the other day. I said, "Hey, is the food good?" They said, "This is the best food we've ever had. It's delicious." And I felt a warm glow.

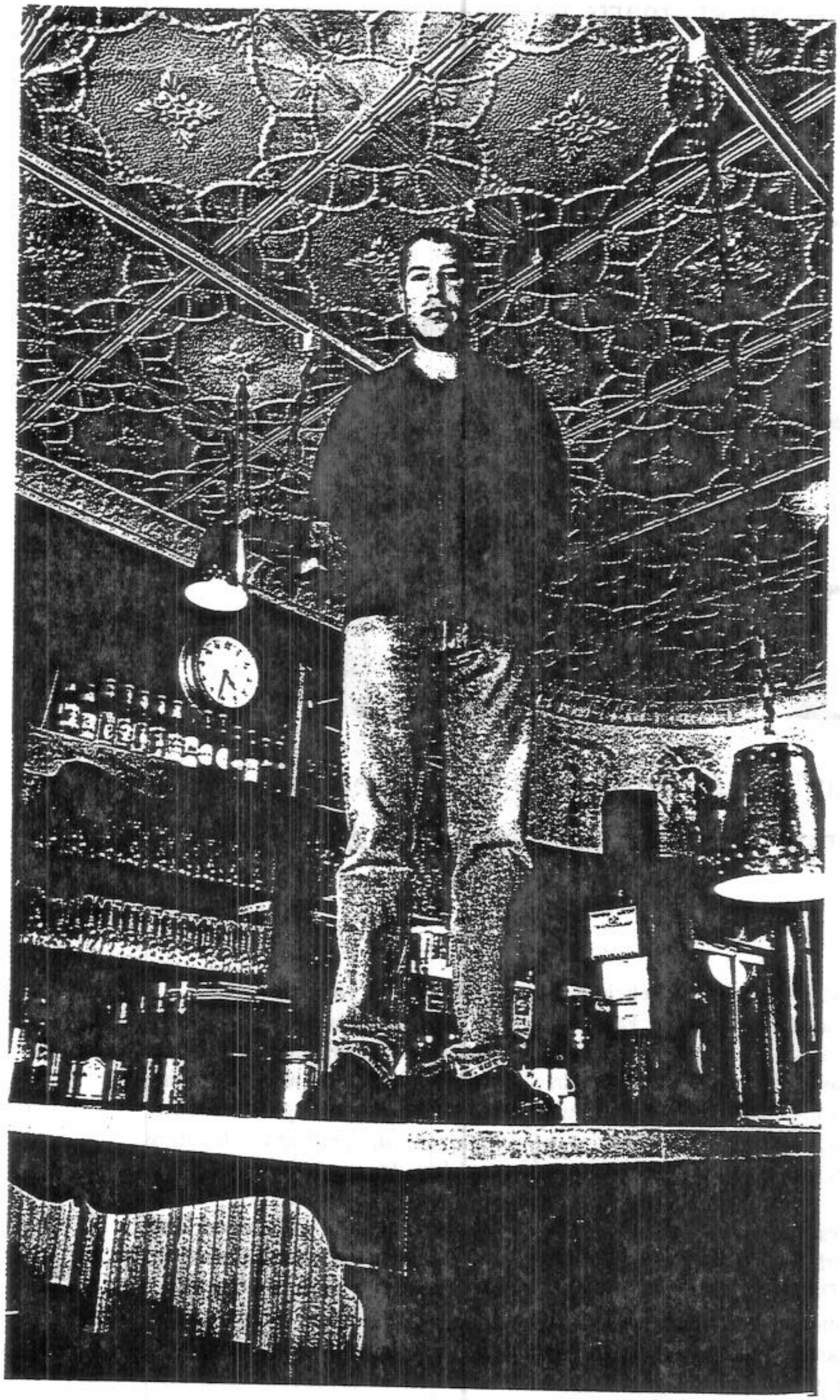
THE PARTNERS: *Norm Brodsky (left) and David Schneider at Harvest Restaurant.*

For me, there's nothing like it—the excitement of seeing a business rise up from nothing. I can't even explain the feeling. There's just something unbelievably thrilling about seeing the growth, watching the numbers go up, getting the business to stand on its own. I've done it myself a number of times, and I can't get enough of it.

And now I'm having the same experience with David's business. I'm seeing it all unfold through his eyes. I see the same spirit, the same perseverance. I know exactly how he feels, coming home at night, not being able to sleep, thinking, "Oh my God, 145 meals! I broke a record!" You can't wait to go back and set another one. It's incredible. It's the greatest feeling in the world.

It's also one of the greatest payoffs you can get as an investor, or so I've realized. Yes, making money is important. I wouldn't go into a deal unless I thought I could get my capital back and earn a good return. But I really don't do this type of investing for the money anymore. I'm more interested in helping people get started in business. Whatever I make is a bonus on top of the fun I have being part of it and the satisfaction I get from

PHOTOGRAPHS: SILVIA OTTE



The Player

NAME: David Schneider

AGE: 31

BACKGROUND: Born and raised in Greenwich Village

MARITAL STATUS: Married, one child

PRIOR EXPERIENCE: 12 years in the restaurant business, including stints at Copacabana and Museum Cafe. Previously owned a bar and was a partner in World Cafe, which he also managed

The Business

HARVEST RESTAURANT: 218 Court St., Cobble Hill, Brooklyn; 718-624-9267; subway F,G to Bergen St.

CUISINE: Modern American with a southern flavor, but changing seasonally

PRICE RANGE: Appetizers, \$3.50–\$7; main courses, \$8–\$14

RESERVATIONS: Accepted for five or more (and it helps to say you're a friend of Norm Brodsky's)

CREDIT CARDS: All major cards

SEATING CAPACITY: 40 inside, plus 24 on a new backyard deck

THE CONCEPT: A hip neighborhood restaurant serving good but not fancy food to upscale customers at down-home prices

THE DEAL: Brodsky puts up the entire start-up capital of \$110,000 and gets 100% of the stock (as well as 100% of the losses) until the principal is repaid. His stake then drops to 25%, but he continues to earn up to 33% of his initial investment (\$36,300) yearly

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helping people like David succeed.

I wish only that I'd figured out how to play this game sooner. It's taken me 25 years and a lot of bad deals to get it right. Not that there weren't opportunities to make money along the way, but somehow they got screwed up. Even when I did make some money, I seldom felt good about it, and I never had much fun. Something always came along to spoil the experience.

In the process, however, I developed a few rules of angel investing, which I've finally been able to bring together in one deal. They may not be right for everyone, but at least they've allowed me to find what I've been looking for all these years.

Rule 1

Invest in people who want your help, not your money

IF I'M GOING TO INVEST IN A NEW VENture, I want to play a role in its success. I come in as a partner, and I expect to be treated like one. Not that I want to run the business or make the key decisions, but I like my opinions to be heard. That means investing in someone who wants to listen. The problem is, people always come across as good listeners when they're asking you for money. So I prefer to give my financial support to those who don't expect it.

David Schneider, for example, came to me looking for advice, not

Touched by an Angel

For David Schneider, it's as if he died and went to Brooklyn • *By Bo Burlingham*

It's 5 o'clock on Friday, and one of the assistant chefs has just stormed out in a huff, but David Schneider appears unfazed. As he returns from calming the troops he raises his hands and shrugs. He's been through worse, after all. There was the day, for example, when he came in and discovered that his number one chef had quit, taking all the cookbooks and recipes with her. He got through that crisis. No doubt he'll get through this one, too.

He says he's happy he can turn to Norm Brodsky for advice on such occasions. His only regret is that they haven't been able to spend more time together. The restaurant has been too successful, and Schneider has been too busy. "I'd really like to go over the numbers with Norm," he says. "I'd like to get his ideas as a good businessman on expenses, margins, that sort of thing."

It was Brodsky's business expertise that made him an attractive investor to Schneider in the first place. "Norm didn't come across as someone who was just looking to own a restaurant so he could come in and say, 'Hey, look at me,' " says Schneider. "He was interested in the business end. He wanted to get a return on his investment. That was part of the appeal. I really liked the idea of having somebody I could go to who cared about this place as a business.

"Then there was the autonomy he was giving me to run my own restaurant. In other places, I've always had partners who demanded a say in everything. You could never get everyone to agree. This time I wanted to run it my way."

Schneider says he had no problem with the terms of the agreement he and Brodsky came to. "My attitude was, 'I have nothing.' And he said, basically, 'Money aside, it's your business to run. I'm not going to meddle.' He said, 'I'll call. I'll check on things. I like to be kept informed. If you have any big decisions to make, come to me. I'll give you advice. But it's your business.'

"And that's pretty much how it's worked. I go to him all the time for his opinion, and he has never said to me, 'This is what I want you to do.' He might ask, 'What about this?' but he's never said no. In fact, he's been incredibly supportive. When our first chef quit and I had to go into the kitchen to cook, I told him I didn't mind—I enjoyed it. And I do. His immediate response was,

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money. He was the manager of a restaurant near my office. My wife had given him an article about my work with a couple I knew who were just getting started in business. He asked me if I'd mind looking over a business plan he'd written for a restaurant he wanted to launch. I said I'd be happy to.

The new place, it turned out, would be located in Greenwich Village. David intended to take over space that had been occupied by another restaurant, now defunct. It was clear from the plan that he knew a lot more about running restaurants than he knew about business. I told him it would never work. For one thing, he needed more money than he was asking for, and I didn't believe he had the ability to raise it. For another, he was paying too much for the space. Beyond that, he would be starting up in the heart of the most competitive restaurant market in the world, and he had no niche, no unique angle, nothing that would give him an edge.

I advised him to try something less ambitious for his first venture, preferably outside Manhattan.

What happened next was most important. He listened to me, took my advice, and—a couple of months later—came back with a new proposal. This time he had found a place near his home in the Cobble Hill section of Brooklyn, an up-and-coming neighborhood with tree-lined streets, old brownstones, and lots of high-income, two-earner families. There were other restaurants in the area but nothing great. The space he had in mind had previously housed a Middle Eastern restaurant that had been around for 24 years. He figured he could lease it at a reasonable price.

I looked over the proposal and went with David to view the location. He asked me what I thought. I said it looked perfect; he should go ahead and negotiate the lease.

"Don't I need to raise some money first?" he asked.

"No," I said. "I'll give you the money."

"What do you mean?" he asked.

"I mean that I'm your new partner."

He must have been shocked. We'd never discussed a role for me as an investor. He didn't object, however, and I felt very confident putting my money behind him. I knew that he'd listen to me and let me help him achieve his goals, and that's all I really wanted.

Rule 2

When possible, go it alone

I DON'T DO LARGE-SCALE, LIMITED-partnership investing anymore, but I used to. During the 1970s and 1980s, I invested in everything from flat-screen-TV technology to glow-in-the-dark toys, usually with groups of 5 to 50 people. I can't recall a single deal in which I made money. In most cases I wound up losing my shirt, or at least a portion of it, and I often had to sue to try to get something back. It was extremely frustrating. I'd see people making decisions that I knew would be disastrous, and yet I had no power to stop them.

There was one deal, for example, in which I helped finance a business that was marketing a new type of toilet seat, called "the American bidet." Believe it or not, it was actually a good product. The problem was that we had seven partners, each of whom wanted to market it his own way. It was like having a ship with seven captains. We kept going around in circles. In the end we wound up selling the rights and the inventory. Of the $35,000 I'd invested, I got back at most about one-third.

By the early 1990s I'd had it with pas-

'Why? Do you want to be doing that in 10 years?' It's like he's always pushing people to better themselves. He wants you to move on, expand, and grow."

Schneider says he had only one anxious moment—when he had to ask Brodsky for an additional $25,000 (above the initial $85,000) because the restaurant building turned out to require more extensive renovations than he'd projected. "He was understanding about it, but at the same time he wanted me to know there were limits. He said, 'It's not a question of money. The money's no big deal, but I'm wondering if there are any more surprises. Should I question the rest of the numbers?' I told him I was standing by the other numbers, and they have held up pretty well—or they would have if we hadn't done so well that we blew away all our projections."

As for the future, Schneider is operating on trust. "Everything's been done on a handshake," he says. "I mean, we both have notes, but I don't really care about having a contract. It's a piece of paper. It means nothing unless you're willing to go to court over it, and I'm not."

Does he ever regret taking Brodsky's advice to drop the idea of doing a restaurant in Manhattan? "No," he says. "I'm very happy I did this place. It's three blocks from my house. I see my wife and daughter more than I would anywhere else. And it's brought a whole lot of new life to the restaurant business for me. I was getting fed up with it, fed up with the clientele you have to deal with in Manhattan. It's so different here. Like the other day, my wife and I were walking down the street, and some guy comes out of a store and sees me. He says, 'Thank you so much for opening that restaurant. It's so wonderful to have a place nearby where I can bring the whole family, and the food's great, and you treat us so well.'

"Listen, the first six months have been a great run. I'm hoping we'll still be going strong 20 years from now."

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sive investing in groups. The only way I'd ever made any real money was with my own two hands. If I was going to back any more new ventures, I decided, I had to be a player, not a bystander. Somehow I had to make sure I preserved my capital and retained some influence over what was done with it.

The result is that I've wound up going it alone. In all the deals I've done since then, I've been the sole outside investor, and it's turned out better for everyone concerned. Granted, I have to stay away from deals that require more capital than I can come up with on my own, but that's a trade-off I'm willing to make. I'm a headstrong person. I have my own ideas about how to build a business, and they sometimes differ from other people's ideas. I don't mind trying to work out those differences with the person who's running the business, but I have no interest in getting into debates with other investors. Better that we go our separate ways.

Rule 3

Take a majority stake until your investment has been repaid

MOST PEOPLE BUILD THEIR INVESTMENT strategies around achieving a certain rate of return on their capital. I take a different approach. My number one goal is preservation of capital. Not that I don't want to make money, but I focus first on getting my investment back. Toward that end, I insist on owning a majority stake in any new venture I finance. The deal is that as soon as I've been paid an amount equal to my initial investment, we'll issue new stock, and my stake will shrink to 25%.

Usually, I take 51% of the stock in the beginning. In David's case, however, I took all of it because the restaurant didn't open for business until mid-October, and so we knew there were going to be significant losses in the first year. I wanted to use those losses to reduce my taxes, and I couldn't get the full benefit unless I owned 100% of the stock. Nevertheless, the principle is the same. Once my initial investment is repaid, my share will go to 25%.

I do this for the obvious reason: I want full control of the company while my principal is at risk. I'm careful, however, about the way I exercise that control. I give advice, but I don't interfere. I don't make decisions.

Not that I keep quiet. Early on, David told me he intended to hire a public-relations firm at $1,500 a month. I wasn't thrilled. I generally advise start-ups not to waste their money on PR. We talked about it. He said that in his experience you needed a PR firm to get reviews, and reviews were critical to a restaurant's success. One good review could generate enough business to cover a year's worth of PR expenses.

Who was I to second-guess him? I know business, not restaurants. As long as he had a reasonable rationale, I wasn't going to stand in his way.

David hired the PR firm, and it turned out to be a great decision. Within weeks of the opening, the restaurant's name began popping up all over the place. There were good reviews in the *Daily News*, the *Times*, and various city magazines, all of which helped the restaurant get off to a fast start, far exceeding our initial projections.

Of course, I wouldn't hesitate to use my authority as majority owner if I thought the entrepreneur was acting irresponsibly, but I almost never have to. People understand and accept the arrangement, and I always get my investment back, usually in a short period of time. I haven't lost a dime on a venture deal since I began to apply this rule.

Rule 4

Retain the right to force a payout

NOBODY INVESTS IN A NEW VENTURE just to avoid losing money. If the business is successful, I expect to make a good deal of money—more than I would make by putting my capital into a bank or bonds or publicly traded stocks. My goal, after getting my principal back, is to earn 33% of my initial investment every year for as long as the business is in operation. Of course, I don't want to bankrupt the company or leave it undercapitalized. Nor do I want to deprive the person running the business of the opportunity to make money as well. So I'm prudent about what I take out.

But I want my partners to understand up front what I hope to earn by putting my capital at risk, and how I expect to get it. Unfortunately, I had to learn the hard way how to keep from being burned.

Making money isn't my primary goal in these deals. My goal is to help people get started in business.

The lesson came in a deal I did in 1991 with a guy who wanted to buy a chain of franchised transmission shops out of bankruptcy. I put up the capital, about $100,000, with my usual understanding: I'd own 51% of the stock until he paid me back, whereupon my stake would drop to 25%. After that we'd split every dollar we took out of the business until I earned my 33% return for the year.

Everything went smoothly at first. We bought the company, contacted the franchisees, and started collecting the money. Within a few months we had 22 stores generating net pretax profits at a rate of $80,000 a year. It was a wonderfully simple business with one employee, no real estate, and virtually no debt.

Then the guy I financed came to me with a plan to leverage the business, expand rapidly, and do various things I considered reckless. I said no. He said, "You can't stop me. If I pay you back, I'll become the majority shareholder."

He was right, of course. There was nothing I could do. He borrowed the money to pay me back, reduced my stake to 25%, and started expanding. The company grew and—despite my misgivings—continued to be successful. I said, "OK, when are we going to start splitting the profits?"

He said, "What profits? We're reinvesting everything. There won't be any profits for a long, long time."

I received about $2,000 on my $100,000 investment over the next six years. I should have been earning more than $30,000 a year, but I had no way to force him to pay me. I couldn't make him declare dividends, and I had no control over what he paid himself in the form of a salary. I felt helpless. It was a very bad experience.

But I did learn a lesson. Now I make sure that the entrepreneur and I agree in advance on how each of us is going to get paid.

For openers, we settle on the entrepreneur's salary. Any other money that comes out of the business goes first toward paying back my initial investment. After I've been repaid, I continue to get a dollar for every dollar the entrepreneur takes out (beyond salary) until I've received my 33% annual return. What's more, I make sure I have a right to *force* the entrepreneur to take money out, up to an agreed-upon amount—say, $600 a week. That way I'm more or less protected if we have a falling-out.

Understand, I'd greatly prefer not to exercise that right. My hope is that just by having it, I'll reduce the chance that I'll ever have to use it.

THERE'S ONE MORE RULE I'M STILL working on. It concerns the perils of success. What do you do when the business takes off and the interests of the entrepreneur diverge from those of the investor?

That happened on my last deal, in which I backed a friend of mine who was privatizing a municipal golf course. It went so well that he decided he wanted to privatize golf courses all over the country. I could understand his enthusiasm, but his plan was too aggressive for me. Besides, under our agreement he was supposed to be focusing his time and attention on the first golf course. I complained enough that we eventually sat down and negotiated a buyout of my contract, which satisfied both of us. We're still good friends. We talk every week.

I'm not sure that I can draw a rule from that episode, but there certainly is a lesson here. It has to do with the importance of figuring out in advance how to tie up the loose ends of a deal—how to part company in a way that will leave all the parties feeling as though they've been treated fairly.

I never worried much about that when I was investing for the money. I just wanted to make as much as I could on every deal—and I wound up making nothing. Now I have different goals. I do these deals because they offer me the opportunity to teach other people some of the things I've learned over the years and to share with them the excitement of bringing a new business into existence.

But even though making money is not my primary objective, I can't ignore the financial aspects of the deal. Like everyone else, I have limited capital. I want to control what happens to it. I want to use it in ways that bring me satisfaction and happiness, and then I want to be compensated fairly for the results. When I don't earn a fair return, I feel as though I've been cheated, which ruins the whole experience for me. It spoils the reward I value most as an investor, namely, the good memories of all the fun and excitement we had along the way.

Sooner or later, David and I will have our own loose ends to tie up. I'm optimistic that if and when we do part ways, we'll be able to part as friends, taking with us some terrific memories. By then David should have some capital of his own that he may want to invest in future ventures. I hope he'll also have the confidence, the knowledge, and the experience to start businesses again and again.

And perhaps someday he, too, will flap his wings and become an angel, lending a hand to another generation of entrepreneurs. For all of us, that would be the greatest payoff of all. ■

Norm Brodsky (brodsky13@aol.com) is a veteran entrepreneur whose six businesses include a former Inc. *100 company and a three-time* Inc. *500 company.*

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WHARTON REPROGRAPHICS

Computers and Technology

The Internet puts 'angel' investors at promising gates

New Web services try to fill an information need for start-up businesses and potential benefactors.

By Samuel Fromartz
REUTERS

WASHINGTON — Angel investors aren't well-known to the public but they have long been a potent economic force, giving start-ups and emerging companies money to get on their feet.

Angels are, at a minimum, millionaires; they're likely former entrepreneurs, and they have an interest in offering hands-on experience, as well as cash, to fledgling enterprises.

Traditionally, they have made investments through friends' recommendations, or by word of mouth. But that is about to change as the Internet brings new opportunities to match cash-strapped companies with investors.

In short, angels are getting wired.

About 250,000 angels invest $20 billion a year in more than 30,000 companies, according to the Small Business Administration. Those figures may be conservative because they are more than a year old.

Investments typically range from about $100,000 to several million dollars and the investors often stay aboard for at least five years.

Angels focus on local markets and industries that they know well. But the tools used by stock-market investors — studying public information before making an investment, looking up a stock price, being able to buy or sell quickly — simply don't exist.

That spells opportunity for entrepreneurs.

A number of private and nonprofit entities have sprung up on the Web over the last year to bring efficiency and standards to this vast market, which has become most advanced in places such as Silicon Valley and Boston. Government regulators are also cutting down red tape to make these networks viable.

PriCap — http://www.pricap.com — is one new venture, started this summer by Chuck Richards, a Hanover, N.H.-based angel investor.

The PriCap Web site essentially allows investors and companies to register anonymously and view data on each other so that the angels can find companies they are interested in and companies can explore investors.

"We're strictly an information service but we get information to people efficiently," Richards said.

The angel market, he explained, is local, but it has national characteristics. An investor active in Boston, for instance, might want to know the price of a similar deal in California. Companies might also want to study ways to structure an investment.

PriCap offers one-stop shopping, bringing all the elements together needed to find an investment, figure out how to structure it and eventually exit. Richards says the Web site is not an exchange, but it eventually could offer a place for an angel to sell out to another investor.

The cost? Investors pay $200 to $1,000 to link up for a six-month period. U.S. companies pay a $150 membership fee, and $500 for a six-month listing.

Richards is trying to build a national network made up of regional "hubs." Associations and service firms — such as lawyers and accountants — will help build each regional service and bring investors and companies as subscribers.

Richards said PriCap is not a matching service. Instead, the company supplies the technology and services that make matches possible.

However, he is not alone. Like anyone trying to fill a market need, others are entering the fray to try and get a piece of the market as it develops.

In the Washington area, Richard Crawford is testing a similar service called EDIE-Online — http://edie-online.com — that brings investors and companies together.

"It's a very inefficient market and that's the opportunity," Crawford said.

But his company differs from PriCap in an important respect.

Rather than trying to build a national network to exchange data, Crawford is offering the service as a stand-alone tool to financial services firms.

EDIE (Electronic Data for Investors and Entrepreneurs) will act as a kind of information bank, so that a brokerage will be able to distribute information about private companies to a select and closed group of investors.

The last thing Crawford wants to do is compete with banks and brokerage houses. He aims to offer a tool that could make their business more efficient.

"I don't want to be in competition with our basic customers," he said.

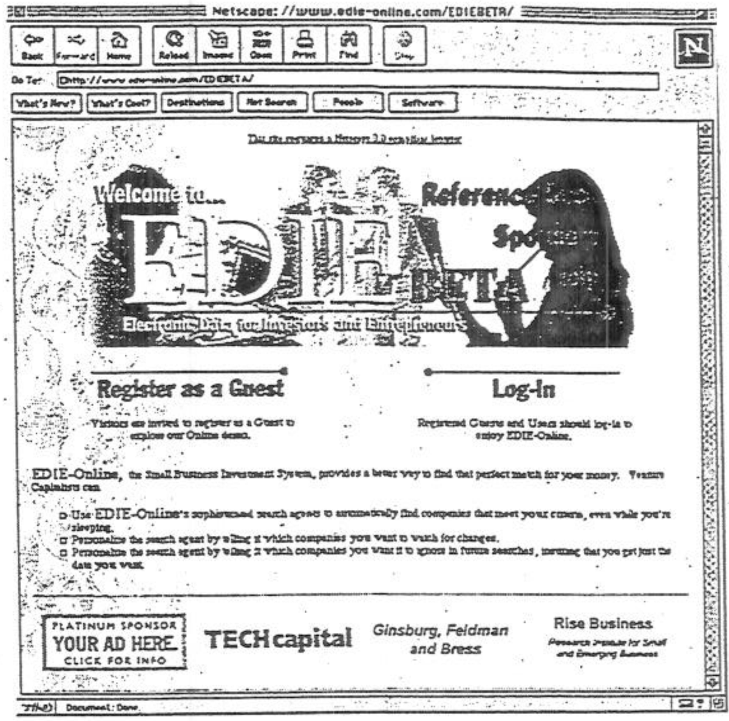
So far he has a large investor, BTG Inc., and plans to launch his first product at a venture-capital fair in the Washington area in November. For a fee, companies will get a chance to post their data on the service.

Crawford has been working on the company for about two years and has been running tests for a network of about 100 private investors. Seventy companies are also online.

The Internet — and its vast power as a communication tool — is what made all of this possible.

"This is a very young market," Crawford said. "We're at the start of a 15- or 20-year process."

Richards used virtually the same words.



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Electronic Data for Investors and Entrepreneurs, better known as EDIE-Online, is expected to bridge the communication gap between select investors and select private firms.

Dan Stets is on assignment. His column, "The Cutting Edge," will resume when he returns.

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WHARTON REPROGRAPHICS

INVESTING

Going public to the public

Small businesses can bypass underwriters and save big money

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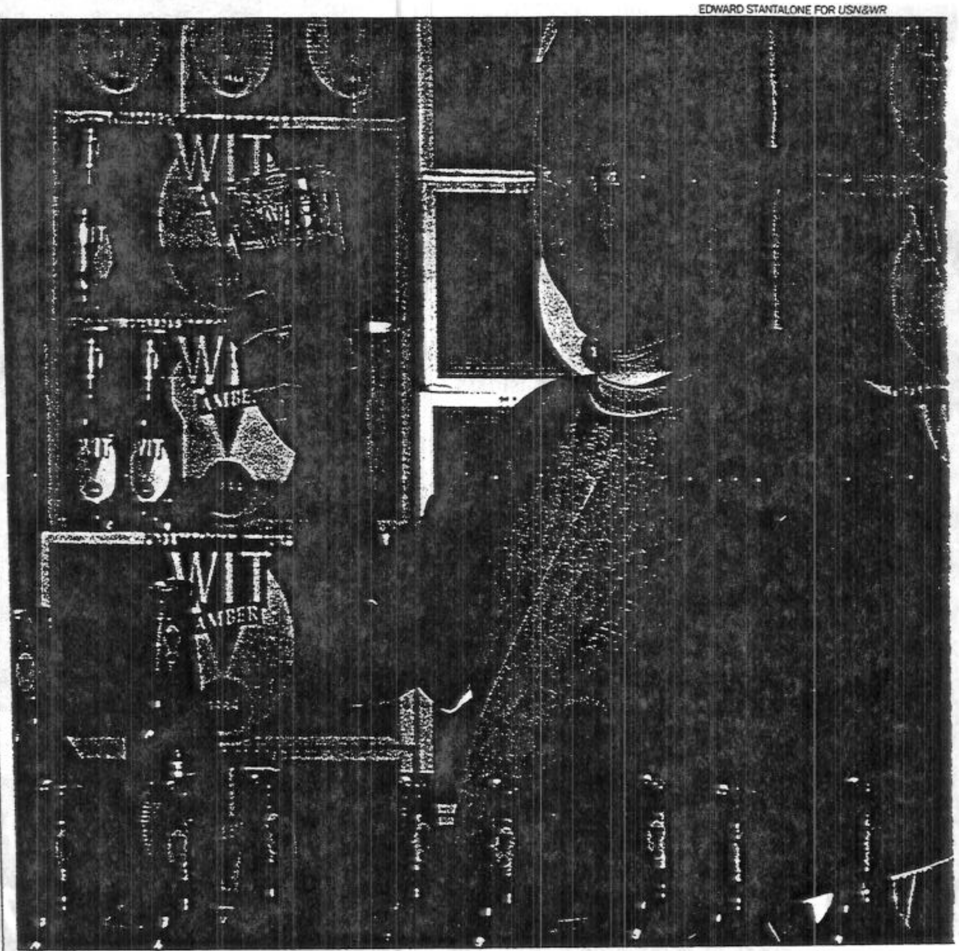


Cheers. *Spring Street Brewing's Andrew Klein went online and raised $1.6 million.*

Spring Street Brewing faced the classic crunch of a fast-growing small business: It needed funds to expand, and getting them would be tough. The three-year-old New York microbrewery was too tiny to interest Wall Street underwriters, but the owners didn't want to sell out to venture capitalists. So last year Spring Street launched an initial public offering–all by itself. The company put up a home page on the Internet's World Wide Web to alert the public to the impending sale and printed notices on six-packs of its Wit ale. The announcements urged customers to call or write for a prospectus and stock order form.

Spring Street billed it, and they came. The offering, which closed in February, drew 3,500 investors, mostly beer connoisseurs. Some 900,000 shares were sold for $1.85 each, raising $1.6 million, without a cent paid in fees to underwriters or brokers. Then in March, the Securities and Exchange Commission gave the brewer the go-ahead to operate a permanent trading site for its stock on its Web page (*http://www.witbeer.com*). Buyers and sellers will negotiate via private E-mail without going through a broker. The site should be up within weeks.

Fifty questions. Direct public offerings, as these do-it-yourself efforts are called, are rapidly gaining popularity with small businesses itching for a cash infusion. Last year, about 40 companies completed direct public offerings, up from an estimated 28 the year before. Small businesses with revenues under $25 million can set up a DPO most easily through a small corporate offering registration (SCOR), a simple process approved by the North American Securities Administrators Association in 1989 and legal in 45 states (Alabama, Delaware, the District of Columbia, Florida, Hawaii and Nebraska may eventually sign on). The business must answer 50 questions about the company and its financial history and list principal risks to investors. In many states, the minimum and maximum amount of money desired is also required, as are details about how it will be spent. The filing usually is made to the banking and finance department or to the secretary of state in each state where the company wants to sell shares. The typical fee is $500.

After regulators approve the SCOR, the company has 12 months to raise the money. Following a successful offering, a company can set up an order-matching service with a local brokerage that will act as a stock exchange or keep a list in house to match buyers and sellers. If a firm does not raise the minimum it has set within the offering period, investors must get their money back, with interest.

By handling all the paperwork, marketing the shares and cutting out most registration, brokerage and legal fees, a DPO can be done at a cost of about 6 percent of the funds raised, against 13 percent for a traditional underwriting. Moreover, DPO investors tend to be loyal, say experts, and do not demand immediate profits. "For shareholders, it's more like buying into a business than buying a stock," says Drew Field, a San Francisco lawyer and DPO specialist.

Companies hawk shares at the grass roots–and in the aisles. The pasta mavens at Annie's Homegrown, a Chelsea, Mass.-based maker of macaroni and cheese that hopes to sell 600,000 $6 shares, launched its offering last August by slipping its pitch into a million boxes of tiny shells. Shareholders in Blue Fish Clothing learned about the offer-

SOME 160 SMALL COMPANIES HAVE USED DPOs TO GO PUBLIC SINCE 1989.

ing from sales tags hanging from its apparel in boutiques at Neiman Marcus and other tony retail outlets. The $10 million-a-year Frenchtown, N.J.-based maker of hand-dyed garments raised $3.9 million from mid-November to mid-May, by selling $5 shares in minimums of 100 shares. "We were hungry for cash," says Jennifer Barclay, 29, who founded the company 11 years ago in her father's garage. "But we only wanted to offer shares to people who understood what our company is all about."

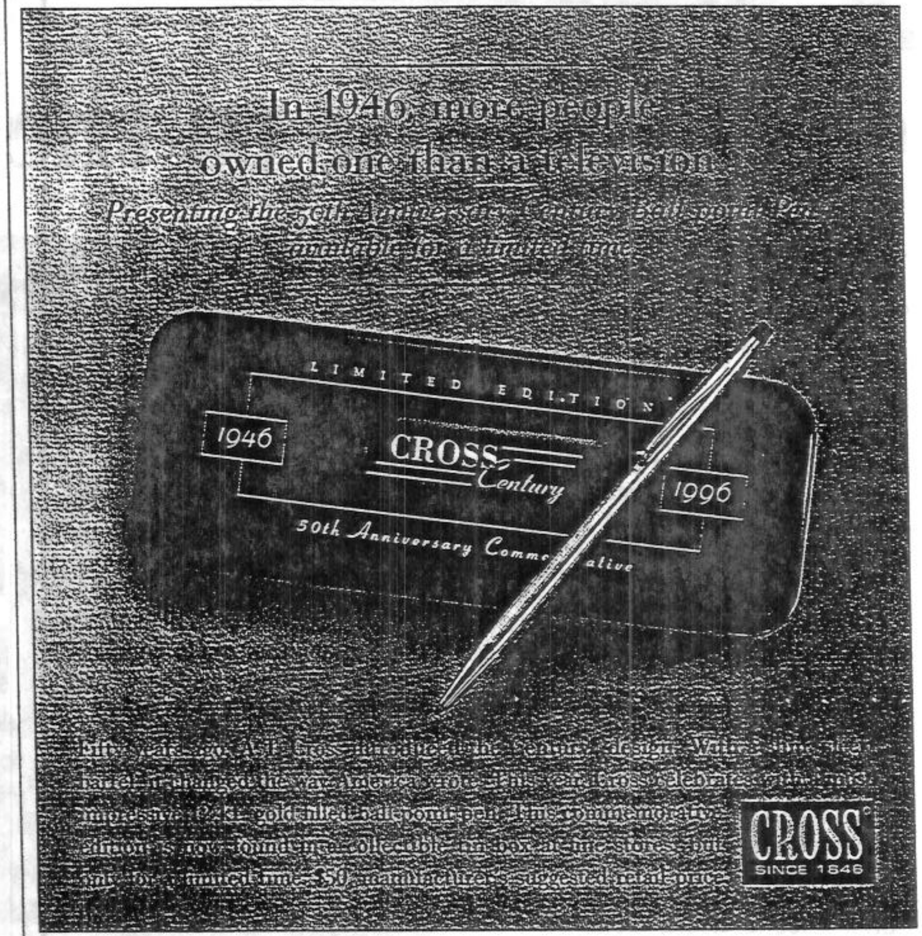
Good bets. Annie's Homegrown and Blue Fish typify good DPO candidates, says Field, with annual sales between $3 million and $25 million and a loyal consumer base. Moreover, a one-product company, such as a brewer, is easier to market to investors than a multiline business might be. Financial statements can be uncluttered, and the business plan can be communicated in a few short sentences.

While launching a DPO is relatively simple, success is more elusive. Last year, only 30 percent of the firms that filed offerings met their minimum goal for raising funds, according to Tom Stewart-Gordon, publisher of the newsletter *SCOR Report* (PO Box 781992, Dallas, TX 75378; $280; 14 issues a year). "That's because management often doesn't have the time to sell shares and run the company at the same time," says Stewart-Gordon.

Potential shareholders need a sense of commitment, too. The small number of shares makes trading difficult, and share prices can take years to rise, if at all. And under SCOR rules, a small business doesn't have to comply with the disclosure requirements of publicly traded stock exchanges. That means it might not provide any audited annual or quarterly financial reports to shareholders. (Many do voluntarily, though.)

On the other hand, owning a little piece of a microbrewery or a funky clothing company is a peculiarly American thrill—and, in time, shares may appreciate, and may even be listed on a regional exchange. Last week, Blue Fish shares traded on the Chicago Stock Exchange at $9. Spring Street's shares last traded at a price of $2, up from the initial $1.85—a modest gain, but worth toasting. ■

BY KERRY HANNON



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WHARTON REPROGRAPHICS

Andy Klein

Inc. talks to Spring Street Brewery's founder about how he raised capital through the World Wide Web

Q. So your company, Spring Street Brewery, was two years old and strapped for cash. Why didn't you go for a traditional initial public offering? What drove you to do an IPO on the Internet?

A. I had barely $200,000 in working capital left when some venture-capital firms got me excited about maybe getting $5 million from them. But over the next six months not one of them said, "Here's the money." They told me to keep in touch. Venture capitalists like to get to you early, open a dialogue, then string you along. That's where we were when I decided to go public.

Q. So frustration led you to go public?

A. There *had* to be a way to raise money other than wasting my time with those guys. Before I started Spring Street, I worked on Wall Street as a corporate lawyer. I was involved in companies that had used Regulation A issues to sell stock directly to the public. They were mostly marketers with a built-in base of supporters for whom the survival of the company was important. Spring Street may have been tiny, but we were much the same. People liked our beer. I believed that if I offered a venture-capital-like security—risky on its face but full of promise—they'd be willing to take a gamble. So I packaged the company into a nice prospectus and marketed it on the World Wide Web.

Q. You hoped to receive the Regulation A ceiling of $5 million. Was less than 40% disappointing?

A. It wasn't a home run the way it would have been had we sold $5 million in one shot. But $1.6 million in relation to the size of our company was a tremendous boost.

Q. Does the ease with which you were able to go public on the Web indicate a regulatory trend toward less coddling of public investors?

A. I don't know if it's less. Under federal securities laws you can sell almost anything to anybody, provided you disclose who you are and what the risks are. The laws have always been predicated on an abundance of faith in the intelligence and sophistication of investors. Once you tell people the facts, they're on their own.

Q. Were you surprised that the media responded so effusively to the offering?

A. I was *amazed*. To me it wasn't a grand plan or even a significant breakthrough. As soon as I announced my intention to use the Internet for an IPO, though, the press concluded that no one had ever done it before. I didn't anticipate the potential people would see in the idea—how this little company stumbled into a method that, taken to its logical extreme, could radically change the way stocks are sold. But soon I felt that excitement myself and seized the entrepreneurial moment. That's what my new venture, Wit Capital, is about.

Q. What *is* it about?

A. I intend to build a team that can bring to market and distribute securities with the efficacy of a leading investment bank. Wit Capital will back developing enterprises by selling public shares over the Internet at a venture-capital stage. That's not going to happen overnight, but the distributive power of the Internet makes it possible to *conceive* that it will happen. We already have a database of 150,000 electronic-mail addresses of prospective investors. Imagine that database growing to 10 million!

Q. Are Internet users sophisticated enough?

A. People who understand that there are such things as IPOs are relatively sophisticated by definition. Those who go the next step and recognize the value of investing in IPOs by purchasing stock directly from issuers, as opposed to getting in only after the

Q. Is the Internet a fresh source of capital for small private businesses?

A. There have been few, if any, opportunities available to people of moderate means to invest in securities that *aren't* of the highest level. But there are many investors with discretionary capital for whom it would be interesting to pick from an assortment of start-up businesses. A place where the public could buy and sell the equivalent of start-up companies in a liquid market could draw an enormous pool of capital.

preferred customers and institutional investors favored by the investment bankers have hyped the market, are particularly sophisticated. They understand that brokers and institutions take a big chunk of money out of the system every time an IPO comes along. In addition, there are great inefficiencies in the printing of documents and the mailings and the road shows and the fancy overhead. All I'm saying is, there's a better way.

Q. Would Wit Capital buy the issue and guarantee to float the whole thing?
A. We plan to offer that guarantee. But we probably won't have to take on actual ownership, because the traffic at our Web site will be a powerful mode of distribution. Having captured E-mail information about prospective investors and being able to communicate with those investors through broadcast E-mail will give us an enormously effective way of distributing first-tier securities.

Q. Won't using the Internet cut out institutions, which are the major market for IPOs now?
A. It will be egalitarian. Institutions will receive the same E-mail as everyone else; they'll be given the same information and permitted to buy shares at the same time and on the same basis as everyone else. What *won't* happen is institutions' receiving special treatment in exchange for their participation in the ultimate public distribution of shares.

Q. Wit-Trade—the digital stock exchange that you set up to provide a market for the 3,500-odd investors who bought into Spring Street's otherwise illiquid float—also triggered considerable media coverage.
A. Actually, more than the IPO. That's because comparatively few people buy stocks in IPOs, but anybody who has a financial interest in *anything* has to use a broker. We've begun a chain reaction that's not going to stop, creating a method by which people will be able to buy and sell stocks themselves without having to pay brokerage commissions at all.

Q. Not only did the SEC allow it, but SEC commissioner Steven Wallman called it "terrific," "innovative," and "fantastic."
A. He was so enthusiastic that my friends wondered what was in the water down in Washington! He sees the same things I see: the digital era is going to make markets more efficient and capital more accessible to a wider range of companies, and it's going to dilute the hold of large financial institutions.

Q. On listed exchanges, dealers are obliged to take the opposite side of the market during extremes to help keep moves from getting out of hand. Is Wit-Trade equally prepared to do that?
A. In all honesty, we haven't developed a satisfactory strategy to address that. There's an argument that trading ought to be free, that if a stock is falling, let it fall. People shouldn't be afraid of a free market where everyone has unlimited access to information. But yes, helping to keep trades from getting out of hand has a calming influence, and we're going to have to figure out what, if anything, we can do to replicate it.

Q. Is there any reason why any small business shouldn't try to pull off essentially the same deal you did?
A. Not everyone can afford to get through the legal process. As in a fully registered offering, with a Regulation A offering you still have to get full state and federal regulatory approval, although the forms are simpler and the fees are less. You have to do financial statements according to accepted accounting standards. If you don't have the money or skills to write a good prospectus, you're not going to be able to tap the public market cheaply.

Q. So it's not quite the do-it-yourself project it seems.
A. Well, it can be. Legal and accounting fees are the obstacle. But you can do a lot of the work on your own and hold those fees to as low as $50,000 by looking at prospectuses from other companies and developing the document yourself. There is less law in a prospectus than there is common sense and business sense. Sit down with lawyers *afterward* and tell them, "Here's the document; *you* make it comply." You shouldn't blithely show up at a law office and announce, "Take care of this IPO and send us a bill." They'll send you one, all right—$75,000 for starters. ■

Senior writer Robert A. Mamis (bob.mamis@inc.com) interviewed Andy Klein for this article. Research assistance was provided by reporter Jerry Useem (jerry.useem@inc.com).

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Numb and Number: Public Offering, Private Turmoil

ON APRIL 9, 1997, AT 10 A.M., AL AGBAY FINALLY MADE IT: HE became head of a publicly traded company. "I really thought there would be high fives and champagne and a lot of congratulating back and forth," says the chairman and CEO of Nexar Technologies Inc., a $19-million maker of easy-to-upgrade desktop computers. "But I was just numb. It was business as usual, which in retrospect was disappointing because going public was truly a grueling process."

Which part, exactly, was *most* grueling? It's hard to say. For Agbay, "nearly everything that could have gone wrong did go wrong"—much of it beyond anyone's control. The result: a hesitant Nasdaq debut and a beleaguered CEO with some straightforward advice for those who view a public offering as their ultimate reward. Leslie Brokaw, senior editor of *Inc. Online,* asked Agbay whom he blames for the fact that Nexar's road show ended just in time for the stock market to "correct" itself by 700 points.

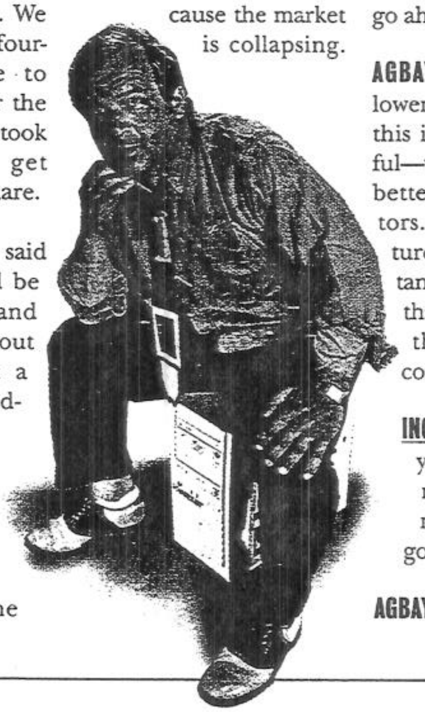
AL AGBAY: It wasn't our underwriters' fault, and I don't think it was Nexar's fault—I think God just said, "Hey, let's hold back." We were having great meetings with potential investors, and it seemed as if they really understood us—we knew a lot of due diligence was going on, because the institutions were calling our accounts and suppliers to verify information—and then it's time to go public, and everything is crashing around us.

INC.: In the last days of your road show, there was also a freak April snowstorm.

AGBAY: We left the Boston meeting, went to the airport, and sat on the plane for an hour before all the flights were canceled. We wound up renting a four-wheel-drive vehicle to drive to New York for the final presentations. It took us nine hours to get there—it was a nightmare.

INC.: Your prospectus said that the stock would be priced between $11 and $13. Instead it came out at $9—and almost a week later than scheduled. What happened?

AGBAY: I had gotten some books about the process, and they said that the ugly part comes after the road show, when you sit with the investment banker and negotiate the price of the stock. And it *was* a painful process. We're negotiating the price, and I'm convinced I have the best product in the industry, so I think my stock is worth *more* than the range on the prospectus, and our lead underwriter, Sands Brothers & Co., wants to convince us that it's worth far *less* because the market is collapsing. Plus, the lower the value, the greater the movement, and the underwriters make money every time the stock changes hands. So those discussions are very ugly. You always say, "Let's not take anything personally," but you can't help it. We had several days of intense discussions.



INC.: Once that was done, did you feel any better?

AGBAY: I was a little bit numb. There was a 48-hour period during the angst and contemplation over the new pricing when I decided to put off the offering for three or four months. I was fluctuating between "OK, it's not going to happen, so where are we going to get the working capital?" and thinking, "Yeah, $9 in this marketplace—we should take it."

INC.: What nudged you to go ahead with it?

AGBAY: We accepted the lower value because—and this isn't corny, it's truthful—we were giving much better value to the investors. And in the big picture it was more important to have $20 million than nothing. We made the only decision we could have made.

INC.: What advice would you give small companies that are trying to make a decision about going public?

AGBAY: Stay private. ■

PHOTOGRAPH: MARNIE CRAWFORD SAMUELSON

WHARTON REPROGRAPHICS

PriceWaterhouse NATIONAL VENTURE CAPITAL SURVEY

Results for First Quarter 1998

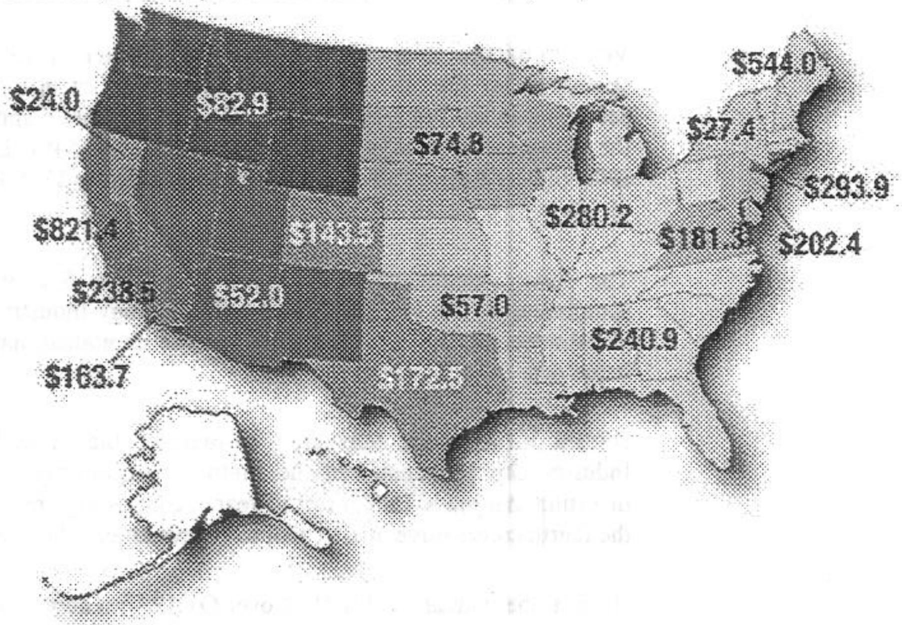
The Price Waterhouse Venture Capital Survey is a quarterly study of venture capital investments throughout the United States.

The Price Waterhouse Survey Research Center contacts more than 1,000 venture capital firms to gather data on each firm's investments during the prior quarter. The information collected and analyzed by Price Waterhouse includes investment by sector (for example, software, hardware & peripherals, semiconductors & equipment, and biotechnology & medical instrumentation), the investment round, total amount of the round and the co-investors.

The data can be viewed as sorted by the following criteria, you can also **search the Venture Capital Survey results** using keywords:

- **Venture Capital Survey 1998 First Quarter Highlights**

First quarter investee companies by region with state and industry (click a region for detail, summary values are shown in millions)



Investee companies by industry & state

- **Biotechnology**
- **Business Services**
- **Communications**
- **Computers & Peripherals**
- **Consumer**
- **Distribution/Retailing**
- **Electronics and Instrumentation**

Venture capital firms by industry

- **Biotechnology**
- **Business Services**
- **Communications**
- **Computers & Peripherals**
- **Consumer**
- **Distribution/Retailing**
- **Electronics & Instrumentation**

- **Healthcare**
- **Industrial**
- **Medical Instruments & Devices**
- **Miscellaneous**
- **Pharmaceuticals**
- **Semiconductors/Equipment**
- **Software & Information**

- **Environmental**
- **Healthcare**
- **Industrial**
- **Medical Instruments & Devices**
- **Miscellaneous**
- **Pharmaceuticals**
- **Semiconductors/Equipment**
- **Software & Information**

Venture capital firms by name

- **A through E**
- **F through M**
- **N through S**
- **T through Z**

- **Venture Capital Survey Summary Tables**
- **Survey Facts & Methodology**
- **Twelve Month Survey Data**

1998 Venture Capital Investments Continue 1997's Record Pace

703 Companies Receive $3.6 Billion in Q1 98 –

Venture-backed investments in the first quarter of 1998 hit $3.6 billion, just slightly below the all-time high of $3.7 billion set in the fourth quarter of 1997 according to the Price Waterhouse National Venture Capital Survey. Compared to the first quarter of 1997, investments increased 54%. Excluding Buy-outs and IPOs (Initial Public Offerings) investments came to $3.2 billion in the first quarter of 1998.

The Survey, conducted by the Price Waterhouse Survey Research Center under sponsorship of the Price Waterhouse Technology Industry Group, tracks quarterly investments in U.S. companies by venture capitalists nationwide in all types of industries.

Donald V. Almeida, Managing Partner for the Price Waterhouse Technology Industry Group, announced the findings. According to Almeida, "The rate of investing that made 1997 a record year is continuing unabated in 1998. This marks the fourth consecutive quarter that total investments have exceeded $3.0 billion.

"In fact, the increase of Q1 1998 over Q1 1997 is about the same as we saw for Q4 1997 versus the year-earlier period in terms of both dollars and percentages. That's especially impressive considering full year 1997 investments totaled $12.8 billion."

For the first quarter of 1998, the number of companies receiving funds increased 23% to 703 compared to 572 companies a year earlier. And, average funding per company increased to $5.1 million versus $4.1 million in the first quarter of 1997.

Geographical Markets

Silicon Valley continued to dominate venture capital investing capturing $821 million. New England had a particularly strong showing with $544 million, while retaining it's number 2 position. In terms of dollars invested, New York Metro ranked third, followed by the Midwest and the Southeast.

Don Almeida observed, "The concentration in Silicon Valley and New England is driven by technology investments. Less obvious is the extent technology is driving investment levels in other places. Technology investments accounted for more than half of all investments in each of the next three leading regions."

In all, 11 regions attracted more than $125 million each. Those regions were:

Region	**# of Co.**	**Region**	**# of Co.**
Silicon Valley	155	LA/Orange Co.	37
New England	107	Texas	34
Southeast	66	DC/Metroplex	27
Midwest	53	San Diego	26
NY Metro	39	Colorado	24
Philadelphia Metro	39		

Industry Sectors

Nationally, technology-based companies far outdistanced other industries. As a group, companies in the classifications of Biotechnology, Communications, Computers & Peripherals, Electronics, Environmental, Medical Instruments, Semiconductors, and Software & Information accounted for 65% of all investments in terms of dollars and 68% in terms of number of companies--$2.34 billion and 479 companies.

As expected, the interrelated categories of Communications and Software & Information continued lead. Together they accounted for 344 companies and $1.82 billion. Healthcare also had a strong showing garnering $428 million, about 12% of all investments.

Don Almeida noted, "Software & Information broke the billion dollar mark for the first time, showing the largest increase over prior year. The Communications sector, fueled by Telecom and the Internet, jumped 56%. These two sectors alone made up over half of all venture capital investing."

Silicon Valley accounted for nearly 40% of all Software & Information investments nationally. However, Communications investments were more diverse with DC/Metroplex, New England and New York Metro all attracting significant shares.

Stage of Company Development

Formative stage companies, those in the startup and early stages garnered the most funding. Together, 317 companies received $1.28 billion, or 35% of the total. On average, each formative stage company received $4.0 million, compared to an average of $3.3 million a year earlier.

Don Almeida commented, "The continued support of formative stage companies and the rise in average funding indicate that venture capitalists are still taking a balanced view of longer term potential. The return on these investments may not be realized for 3-4 years."

Companies in the expansion stage ranked second with $1.14 billion going into 212 companies. On average, companies in this stage received $5.3 million versus $4.8 million a year ago.

Noteworthy Deals

A number of deals across the country are notable for their products, their funding, or their geography.

- **Broadbase Information Systems**, Menlo Park, CA; Data warehousing software, $12,000,000, Early Stage of Development
- **Lifecare Management Services**, Dallas, TX; Long term acute care services, $11,369,000, Expansion Stage of Development
- **Rainstar International**, San Francisco, CA; Antenna technology, $2,000,000, Start-up/Seed Stage of Development
- **IntraNetics, Inc.**, Woburn, MA; Intranet-in-a-box software solution, $8,300,000, Early Stage of Development
- **Chromatis Networks, Inc.**, Evanston, IL; Optical networking equipment, $6,849,000, Early Stage of Development
- **High Tower Software**, Burbank, CA; Data monitoring for complex systems, $565,000, Early Stage of Development
- **Cielo Communications**, Broomfield, CO; GBPS transceivers, $10,000,000, Expansion Stage of Development
- **Transmedia Communications, Inc.**, San Jose, CA; Multimedia carrier services platform, $5,200,000, Start-up/Seed Stage of Development
- **e-Beam**, Westlake Village, CA; Projection display technology, $2,000,000, Early Stage of Development

Venture Capitalists

Of the 485 venture capitalists responding to the survey, those making investments also identified 250 co-investors. Therefore, first quarter results reflect the activity of a total of 735 venture capital firms.

Among the more active venture capitalists responding to this quarter's Price Waterhouse survey were those that reported funding 5 or more companies *and* total investments of $10 million or more. They were:

- **Accel Partners** reported $25,870,000 in 13 companies
- **Allied Capital** reported $29,619,000 in 7 companies
- **Alta Communications** reported $20,501,000 in 6 companies
- **Apex Investment Partners** reported $11,175,000 in 13 companies
- **Austin Ventures** reported $11,177,000 in 6 companies
- **BancBoston Capital** reported $58,808,000 in 16 companies
- **BCI Growth** reported $25,413,000 in 5 companies
- **Bessemer Venture Partners** reported $11,571,000 in 10 companies
- **Brentwood Venture Capital** reported $27,963,000 in 14 companies
- **Canaan Partners** reported $10,500,000 in 5 companies
- **Centennial Fund** reported $14,014,000 in 6 companies
- **Chase Capital Partners** reported $78,700,000 in 7 companies
- **Crosspoint Venture Capital** reported $25,081,000 in 12 companies
- **Domain Associates** reported $15,800,000 in 5 companies
- **Dominion Ventures** reported $13,200,000 in 6 companies
- **Foundation Capital** reported $12,300,000 in 5 companies
- **Golden Thoma Crassey Rauner** reported $45,615,000 in 10 companies
- **Greylock** reported $31,350,000 in 17 companies
- **Grotech Capital Group** reported $15,450,000 in 5 companies
- **Hambrecht & Quist Venture Capital** reported $15,084,000 in 13 companies
- **HarborVest Partners** reported $39,000,000 in 7 companies
- **IAI Ventures** reported $12,283,000 in 10 companies
- **InterWest Partners** reported $16,585,000 in 8 companies
- **InveStar** reported $11,750,000 in 6 companies
- **J.H. Whitney & Co.** reported $28,900 in 7 companies
- **JAFCO America Fund** reported $16,231,000 in 8 companies
- **Mayfield Fund** reported $26,988,000 in 13 companies
- **Menlo Ventures** reported $11,400,000 in 6 companies
- **Morgan Stanley Venture Partners** reported $17,360,000 in 8 companies
- **Morgenthaler Ventures** reported $10,549,000 in 8 companies
- **New Enterprise Associates** reported $23,688,000 in 10 companies
- **Norwest Venture Capital** reported $26,890,000 in 11 companies
- **OneLiberty Ventures** reported $11,316,000 in 8 companies
- **Oxford Partners** reported $11,002,000 in 8 companies
- **Patricof & Co. Ventures** reported $13,663,000 in 10 companies
- **Piper Jaffray Ventures** reported $12,131,000 in 8 companies
- **Primus Venture Partners** reported $13,300,000 in 7 companies
- **Sierra Ventures** reported $11,250,000 in 6 companies
- **Softbank Technology Venture Fund** reported $11,831,000 in 6 companies
- **Sprout Group** reported $36,707,000 in 15 companies
- **St. Paul Venture Capital** reported $27,390,000 in 21 companies
- **Summit Partners** reported $104,425,000 in 6 companies
- **Technology Crossover Ventures** reported $17,750,000 in 6 companies

For nearly 150 years, **Price Waterhouse** has helped the world's leading companies solve complex business problems. Today, through a worldwide network comprising 53,000 professionals in 119 countries and territories, Price Waterhouse assists clients in implementing strategies to improve business performance; effecting organizational and strategic change; using information technology for competitive advantage; and meeting audit and tax requirements. Price Waterhouse U.S., with 16,000 men and women throughout the U.S., is a vital part of the worldwide Price Waterhouse organization (http://www.pw.com).

The Price Waterhouse **Technology Industry Group** assists innovative and fast-moving companies in the life sciences, networking and communications, semiconductor, software, and computers and peripherals industries. These business advisers have experience in helping domestic and international companies in all stages of growth (http://www.pw.com; for Venture Capital Survey results http://www.pw.com/vc).

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PriceWaterhouse NATIONAL VENTURE CAPITAL SURVEY

1998 First Quarter: Percentage of Investment by Industry

Industry	Investment Amount	% of Total
Biotechnology	148,590,000	4.1%
Business Services	195,372,000	5.4%
Communications	791,591,000	22.0%
Computers & Peripherals	119,201,000	3.3%
Consumer	207,461,000	5.8%
Distribution/Retailing	211,720,000	5.9%
Electronics & Instrumentation	80,051,000	2.2%
Environmental	1,750,000	0.0%
Healthcare	428,449,000	11.9%
Industrial	157,021,000	4.4%
Medical Instruments	148,419,000	4.1%
Miscellaneous	9,500,000	0.3%
Pharmaceuticals	50,064,000	1.4%
Semiconductors/Equipment	21,400,000	0.6%
Software & Information	1,029,922,489	28.6%

Total	**$3,600,511,489**	**100%**

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NATIONAL VENTURE CAPITAL SURVEY

1998 First Quarter: Percentage of Investment by Region

Region	Investment Amount	% of Total
Colorado	143,549,000	4.0%
DC/Metroplex	181,327,000	5.0%
LA/Orange County	238,510,000	6.6%
Midwest	280,236,000	7.8%
New England	544,042,000	15.1%
North Central	74,765,000	2.1%
Northwest	82,890,000	2.3%
NY Metro	293,911,489	8.2%
Philadelphia Metro	202,356,000	5.6%
Sacramento/No. CA	24,000,000	0.7%
San Diego	163,739,000	4.5%
Silicon Valley	821,396,000	22.8%
South Central	57,040,000	1.6%
South West	52,008,000	1.4%
Southeast	240,908,000	6.7%
Texas	172,465,000	4.8%

Upstate NY	27,369,000	0.8%
Total	**$3,600,511,489**	**100%**

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PriceWaterhouse FUNDED COMPANY

Community Corrections Corp.
Roseland, NJ

Industry: Consumer
Company stage of development: Expansion

Business Description: Owns and operates minimum-security prisons that provide substance abuse rehabilitation to inmates.

Amount of Round: $2,640,000
Type of financing: Second

Investors:
BCI Growth IV LP
Argentum Capital Partners
Apex Investment Partners

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PriceWaterhouse VENTURE CAPITAL FIRM

BCI Growth IV LP

Glenpointe Centre West, Teaneck, NJ 07666

E-mail address: bciadv@mail.idt.net
Phone: (201) 836-3900
Fax: (201) 836-6368
Region/State: NJ

Investments (with Industry):
Catamount Broadcasting (Communications)
Community Corrections Corp. (Consumer)
Dominion Management (Business Services)
Savvis Communications (Software & Information)
Transenergy Management Inc. (Software & Information)

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PriceWaterhouse FUNDED COMPANY

American Hard Cider Company Inc.

Boston, MA

Industry: Consumer
Company stage of development: Early

Business Description: Produces hard cider under the cider jack brand name.

Amount of Round: $1,051,000
Type of financing: Fourth & Beyond

Investors:
Hambrecht & Quist Venture Capital

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PriceWaterhouse VENTURE CAPITAL FIRM

Hambrecht & Quist Venture Capital

One Bush St 18th Floor, San Francisco, CA 94104

WWW address: http://www.hamquist.com
Phone: (415) 576-3300
Fax: (415) 677-7747
Region/State: CA

Investments (with Industry):
2Way Corporation (Software & Information)
American Hard Cider Company Inc. (Consumer)
Arithmos (Computers & Peripherals)
Cogito Learning Media(formerly: Interactive Science) (Software & Information)
Colorado Microdisplay Inc. (Computers & Peripherals)
Custom Foot (Distribution/Retailing)
DB Star Inc. (Software & Information)
InterNAP Network Services Corporation (Communications)
Listing Services Solutions Inc. (Communications)
Mainstreet Marketing Software Inc. (Software & Information)
MyoPoint Inc. (Healthcare)
REX Development Partners LP (Software & Information)
Silicon Valley Networks (Software & Information)
Unisyn Technologies Inc. (Biotechnology)
Virage Inc. (Software & Information)

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THE PHILADELPHIA INQUIRER
Monday, May 25, 1998

Venture capital revives company

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WHARTON REPROGRAPHICS

For The Inquirer / BRAD BOWER

Biochemist Maria Maccecchini is chief executive of Bearsden Bio Inc., which is based in Aston.

Bearsden Bio is among 31 area firms that received $86.9 million in the first quarter.

By Rosland Briggs
INQUIRER STAFF WRITER

Three years ago, Symphony Pharmaceuticals fired 16 of its 26 employees and moved out of its Malvern laboratories to the University City Science Center and a smaller office in Malvern. A research project had failed, costing the company a lot of money.

"We almost died," said president and chief executive officer Maria Maccecchini, a biochemist who started the company in 1993.

Now, the company, renamed Bearsden Bio Inc., has 75 employees, manufacturing capabilities, and a new 15,000-square-foot location in Aston. Much of that growth came through venture-capital investing, including $800,000 the company received during the first three months of 1998.

During the same period, 31 area companies received investment capital totaling $86.9 million. One packaging-materials manufacturer, Klearfold Inc., received $34 million from venture capitalists for a buyout. In the same period last year, 25 companies received $40.8 million.

Venture-capital funding is usually sought by emerging companies or those embarking on risky new ventures, such as medical research. Investors usually get part ownership in the businesses and a share of future profits.

To revive Bearsden Bio after the project failure three years ago, Maccecchini received federal grants totaling $5 million. At the time, the company did brain research to develop drugs for ailments of the central nervous system.

Then, last year, more help ar-

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rived. S.R. One Ltd., a Wayne venture-capital firm that held a majority stake in the company, was looking for an experienced person to run Cruachem, a Scottish company in which S.R. One also held a majority stake. Cruachem manufactured genes and pieces of genes for pharmaceutical companies.

"We needed a technologist in charge," said Peter Sears, president of S.R. One. "Maria Maccecchini had all the right credentials. Symphony's funding was drying up; so we decided to put the two companies together."

In June 1997, the companies merged. Cruachem had manufacturing sites in: Japan, which was closed; Glasgow, Scotland, which was expanded; and Herndon, Va., which will be moved to Aston by the end of the summer.

The merger combined the innovation of Symphony with the production capabilities of Cruachem, which needed new product lines. It also provided Symphony with $10 million to support its research efforts.

Biotechnology was No. 1 in the number of recipients, but health care got more cash.

After the $800,000 investment during the first quarter of 1998, S.R. One's total investments in the new Bearsden Bio came to $2 million. With the capital infusion this year, Bearsden paid off Cruachem's debts and started a biotech research company. Message Pharmaceuticals, which on its own received $150,000 from venture capitalists as seed capital, will create technology for drug discovery.

"You either get money from the government or from VCs," venture capitalists, said Maccecchini. "The bank won't touch you with a stick because you have no money."

Bearsden Bio and Message Pharmaceuticals were two of eight area biotechnology companies that received venture-capital funds during the first quarter of 1998, according to an Inquirer/Price Waterhouse Venture-Capital Survey. But while the number of biotechnology companies receiving funds outnumbered those in any other category, the category received only 13.5 percent of total funds ventured.

"Biotechnology companies in this area are undercapitalized, so when you make a mistake or something goes wrong, the company goes under," Maccecchini said. Investors "here are a little more skittish. I like Philadelphia, and I'm going to stay here. But if you look, it's a little scary that many companies don't make it here."

The health-care sector, with six companies receiving venture capital last quarter, topped the list with the highest percentage of funds received: 45.1 percent of the total. The bulk of the money, $32 million, went to Brandywine Senior Care Inc. in Exton for expansion.

Brandywine is a "one-stop shop" for services to infirm elderly, said president and founder Joe Williamson. It offers skilled nursing, assisted living, adult day care, home health care and other services. The company buys established, upscale nursing homes in the Philadelphia suburbs and New Jersey. It then adds other services at the location or nearby to give senior citizens more options.

"The key to what we're doing is guiding seniors to the best outcome and the most efficient cost," Williamson said. "Our concept is to cluster the non-acute continuum of services."

Williamson has been in the industry for 20 years, and each of his executives has at least 10 years of experience. By July, Brandywine plans to have 2,000 beds for skilled nursing care and 1,500 assisted-living units in 11 locations, Williamson said. It also will double its current employment to 1,750 full-time employees and 750 part-timers.

Brandywine Senior Care started 15 months ago with $15 million in venture capital from a Baltimore firm. Last quarter, it received $32 million from four firms, including $2 million from Keystone Venture Capital in Center City.

"This is a very capital-intensive business," Williamson said. "Each assisted-living facility is an $8 million-to-$10 million proposition. The only way to do that quickly is to give up part of the company to venture firms."

John Regan, general partner at Keystone Venture Capital, said his company was drawn to Brandywine Senior Care because of the experience of its management team and the growth potential for assisted living.

Venture capitalism is, by definition, risky. But if the products are untested, sometimes the people are as close to a sure thing as one could find.

Such is the case with Helmer "Hank" Agersborg, founding CEO of Maret Corp., a Wayne company that is developing a drug it believes will speed the healing of wounds.

Maret is the third company that Agersborg has helped found since 1990, when he retired as president of Wyeth-Ayerst Research, the pharmaceutical arm of American Home Products.

The $300,000 that Maret drew in venture capital from InnoCal during the last quarter is testimony at least in part to the expertise Agersborg developed in 32 years at Wyeth, where he had a hand in bringing 54 new drugs to market.

Each of the new ventures he has taken on since retirement has drawn the interest of venture capitalists. And each has been built on the same model as Maret: take a promising development, license the technology, and shepherd it through the approval process at the federal Food and Drug Administration.

"Other people have found these ideas, and have come to me to help develop these companies until they can be spun off and stand on their own," Agersborg said. He added with a chuckle: "I'm not really an entrepreneur, just an interested bystander with a bit of expertise to assist, hopefully, in the right direction."

Whatever his role, he has proved successful at it. One of the ventures, Collagenix Pharmaceuticals Inc., has already gone public and is seeking FDA approval for a drug intended to fight the degenerative gum disease called periodontitis. Another, Afferon Corp., is testing a drug that it believes will help people who suffer urinary incontinence.

The difference between managing in the corporate world and Agersborg's latest ventures can often be striking. "I spent more in a day then than I do in a year now," he said.

But he finds the work relaxing, and the rewards promising. At 69, he said, his motives were fairly basic.

"The motivation was really just to have something interesting to do, and to get paid for it," Agersborg said.

The Inquirer/Price Waterhouse survey is part of a nationwide study by the financial-services and management-consulting firm. Venture capitalists respond voluntarily, so the investments listed may not reflect total venture-capital investments in the area. Nationwide during the first quarter, Price Waterhouse tracked $3.6 billion in venture-capital investments in 703 companies. In the first quarter of 1997, 572 companies received $2.3 billion, the survey found.

Staff writer Jeff Gelles contributed to this article.

THE PHILADELPHIA INQUIRER
Monday, May 25, 1998

The Inquirer/Price Waterhouse Venture-Capital Survey

First-quarter investments in some local companies by venture-capital firms.

Company/Location	Type of business	Investors	Stage of development	Investment
Klearfold Inc. (Impac Group) *Warrington*	Manufacturer of high-end paperboard and plastic packaging materials.	Heritage Partners; others	Late	$34,000,000
Brandywine Senior Care Inc. *Exton*	Skilled nursing, assisted living, adult day care, home health care, sub-acute care.	ABS Ventures Ltd., Partnerships; Conseco; Grotech Capital Group; Keystone Venture IV	Expansion	32,000,000
3-Dimensional Pharmaceuticals Inc. *Exton*	Computerized drug discovery.	Biotech Capital Corp.	Late	10,400,000
Berger Holdings Ltd. *Feasterville*	Manufacturer of roof drainage products.	Tandem Investments Inc.; Argosy Investment Partners LP	Public	6,500,000
Ginsey Industries Inc. *Bellmawr*	Manufacturer of bathroom and juvenile products.	Allied Capital	Expansion	6,000,000
U.S. Physicians Inc. *Fort Washington*	Physician-practice management company.	NEPA Venture Funds; Keystone Venture IV LP; Edison Venture Fund; Dominion Ventures Inc.	Late	6,000,000
Marlin Leasing Corp. *Cherry Hill*	Equipment lease-financing services.	Primus Venture Partners	Early	5,000,000
U.S. Fleet Services Inc. *Horsham*	On-site fleet-fueling services.	Golder Thoma Cressey Rauner Inc.	Early	4,527,000
Storeroom Solutions *West Chester*	Software/services to manage maintenance, operations and supplies in industrial plants.	Geocapital Partners	Expansion	3,500,000
Exigent Diagnostics Inc. *Radnor*	Designs products for routine medical diagnostic tests.	SmithKline Corp., Victory Ventures; Child Health Investment Corp., Spencer Trask Securities	Early	3,400,000
Genesis Teleserv *West Conshohocken*	Integrated customer-contact services, including telesales, customer service and technical support.	Prime New Ventures; Edison Venture Fund; BT Capital Corp.	Late	2,576,000
Listing Services Solutions Inc. *Lumberton*	Database management system for the directory-assistance market.	Hambrecht & Quest Venture Capital	Early	1,000,000
Bearsden Bio Inc. (formerly Symphony Pharma) *Aston*	Exploitation of RNA through sales of reagents and development of therapeutics.	S.R. One Ltd.	Early	800,000
Vintek Inc. *Philadelphia*	Information-services provider.	Patricof & Co. Ventures Inc., others	Early	800,000

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The [illegible] Price Waterhouse Venture Capital Survey

CEMA Technologies Inc. *Bridgeport, Pa.*	Makes electrically conductive hinges for portable computers and telecommunications equipment.	Progress Growth Fund; DVCRF Ventures LP; NEPA Venture Funds; Osage Investments Inc.	Expansion	750,000
Integrated Medical Management *Malvern*	Business and management services to health-care providers.	St. Paul Venture Capital Inc.	Early	567,000
Atlantic Greenhouse *Pipersville*	Producer of indoor grown flowers and other foliage.	Canaan Partners	Not categorized	500,000
ConneXus Corp. *Berwyn*	Interactive music information and retail.	Comdisco Venture Group	Early	500,000
Infusion Dynamics Inc. *Plymouth Meeting*	Development and commercialization of rapid IV infusion pump and related products for trauma care.	Ben Franklin Technology Center of SE Pennsylvania	Start-up/seed	493,000
Maret Corp. *Wayne*	Developing compound for healing of wounds.	InnoCal	Early	300,000
ActiMed Laboratories Inc. *Burlington*	Develop/manufacture disposable diagnostic products.	S.R. One Ltd.	Early	285,000
Message Pharmaceuticals Inc. *Aston*	Technology for drug discovery, focusing on RNA.	S.R. One Ltd., Euclid Partners Corp.	Start-up	150,000
More Com Inc. *Newtown*	Broadband Internet services platform.	Ben Franklin Technology Center of SE Pennsylvania	Start-up/seed	150,000
Veritas Medical Services Inc. *Philadelphia*	Administrative software for health-care providers.	Ben Franklin Technology Center of SE Pennsylvania	Start-up/seed	150,000
Dynamics Therapeutics Inc. *Malvern*	Drug discovery, focusing on complications of diabetes and diseases associated with aging.	Ben Franklin Technology Center of SE Pennsylvania	Start-up/seed	100,000
Oratech Inc. *West Chester*	Ovulation prediction method for increased profitability in dairy-herd management.	Ben Franklin Technology Center of SE Pennsylvania	Start-up/seed	100,000
Automated Currency Instruments *Chester Springs*	Manufacture and service of coin-counting equipment.	Ben Franklin Technology Center of SE Pennsylvania	Start-up/seed	91,000
AeroPulse Inc. *Bensalem*	Makes air-filtration systems used in manufacturing.	Ben Franklin Technology Center of SE Pennsylvania	Early	75,000
Millennium Medical Products *Villanova*	Design and manufacture patient lift and transfer device.	Ben Franklin Technology Center of SE Pennsylvania	Start-up/seed	50,000
PharmCell Research Co. *Bala Cynwyd*	Developer of laboratory test instruments.	Ben Franklin Technology Center of SE Pennsylvania	Start-up/seed	50,000
PTI Research Inc. *Exton*	Hydrophobic heparin salt to prevent restenosis.	Ben Franklin Technology Center of SE Pennsylvania	Start-up/seed	50,000
Temme Pharma Inc. *Wayne*	Treatment for endometriosis.	Ben Franklin Technology Center of SE Pennsylvania	Start-up/seed	50,000

SOURCE: Price Waterhouse LLP

The Philadelphia Inquirer

Young M.B.A. Seeks Attractive Company

MANY BRIGHT young sparks fresh out of business school dream of owning a company. But faced with the daunting prospect of raising money without operating experience, most take a well-trodden path, ending up at consulting or investment-banking firms. A form of financing bred on the campuses of Stanford and Harvard business schools offers an alternative.

It's known as a "search fund," and it works like this: Young M.B.A. decides to buy a company. M.B.A. persuades a dozen or so investors to ante up a limited sum, perhaps $20,000 apiece. For the next one to three years, the M.B.A. uses that money to look for a company to acquire—ideally, in an industry in which the M.B.A. has some expertise—while collecting a modest salary (say, $50,000). Once the M.B.A. identifies a suitable and willing seller, the original investors are guaranteed the right to invest a much larger sum, like $300,000, for a chunk of the company's equity. Assuming the investors like the company as much as the M.B.A. does, then voilà, the M.B.A. soon realizes the dream of business ownership.

Since the mid-1980s, when Continental Cablevision cofounder and business-school lecturer Irv Grousbeck developed the search-fund concept with a group of students, 15 of his former students at Harvard and Stanford have successfully replicated the formula (there have been four failures) and at least 6 others are currently trying to do so. One of them, Doug Wells, calculated that, on average, the successes have produced a 40% internal rate of return.

SEARCH FOR TOMORROW: *John Moran is looking for a sweet deal.*

Some marvel at investors' willingness to fork over money to an unseasoned graduate. "It's arrogant to imagine that you're going to come in and suddenly make a lot of good things happen," offers Harvard Business School professor William Sahlman, who says he's seen several M.B.A.'s purchase small companies with the naive belief that the financial analysis they learned in the classroom will be enough to turn the business around.

Perhaps John Moran, a Harvard M.B.A. in the midst of the search process, has assuaged his investors' fears by assuring them he'll buy a company with a steady cash flow, not a turnaround that requires Herculean management skills. Out of his tiny $318-a-month San Francisco office, he's using his search fund, Redwood Partners Inc., to look for an occupational-training company with strong growth potential and a price tag between $15 million and $60 million. Moran admits that he will give up more equity—75%, which is comparable with the amount given up in most search-fund deals—than he would without a search fund. But he can scarcely conceive of buying a company without one. "You certainly wouldn't have the time and resources to uncover a really sweet deal," he says. ▣ *—Jerry Useem*

IPO Corrections

Nervous CEOs and investors make the market for initial public offerings one of the least pleasant places to be these days. You might think this past summer's correction will lead to a prolonged malaise in the market. Not so, says William Smith, an analyst at the Connecticut-based Renaissance Capital Corp., an institutional-research firm. Smith and others agree that, despite the headline-grabbing antics of Netscape wanna-bes, today's market is not driven by young high-tech companies, whose stocks sagged during the 1983 correction. Two decades ago, high-tech and emerging-growth stocks accounted for as much as 75% of the IPO pipeline, Smith reports, a number that is 33% now. "There's more diversity today," he says, "and the firms are more substantial." Smith predicts that the 1996 correction will be relatively less painful. "It will be a few months until this cycle washes out, but people are a bit more sophisticated today, and they'll pop right back into it." *—Mike Hofman*

PHOTOGRAPH: ROBERT HOLMGREN

WHARTON REPROGRAPHICS

Business for Sale: *Midwest Amusement Park*

THE BUSINESS Ready to jump off the corporate merry-go-round? Try running a roller coaster instead. This one's part of a 40-ride amusement park on an interstate outside a major midwestern city. The park, 37 years old, also contains a 10-acre water park and an ice-skating rink. The bulk of revenues comes from $13.95-per-person admission tickets. The sale includes $4.5 million worth of rides and maintenance equipment and $450,000 to $700,000 in gift-shop items, prizes, and ice-skating equipment. Four key managers are willing to stay on. The owners are ready to retire.

Financials	1993	1994	1995
Gross Revenues	$4,882,000	$4,578,000	$4,790,000
Recast Earnings*	$703,500	$176,300	$496,100

*Before depreciation, interest, taxes, and owner compensation

PRICE $5 million (real estate not included; the current lease runs until 2008)

OUTLOOK Fun city. Americans spend about $6 billion a year at amusement parks. This 55-acre park attracts 400,000 customers yearly. The buyers could boost revenues by raising ticket prices, charging for now-free parking, or investing in glitzy new equipment.

PRICE RATIONALE Two sticking points here: a land lease that dead-ends too soon and a cash-flow pattern that's positively hair-raising. Without a lease extension or an option to buy the land, you're left with a deal that has to pay for itself in less than 12 years. Meanwhile, with recast earnings bouncing around more than the customers do, one appraiser advises buyers to estimate cash flow at a conservative average, say about $290,000. (Three years of recast earnings add up to $1.375 million, which he reduces by a 10% "fudge factor" to $1.238 million; he then subtracts $125,000 a year for the managers' and owner's salaries. Divide that figure by three.) That could comfortably support a lower price of $2.5 million to $3 million, he says, but only with a lease extension.

PROS Who says work can't be fun and games?

CONS At this amusement park, the owner is on the scariest ride of all.

—*Jill Andresky Fraser*

Inc. has no stake in the sale of the business featured. *The magazine cannot confirm the accuracy of financial or other information offered by the seller. Inquiries should be directed to Bharat Shah, 630-241-0170.*

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PHOTOGRAPH: HY PESKIN/FPG INTERNATIONAL

Business for Sale: *Florida Taxi Company*

THE BUSINESS Things haven't changed since those days when you moonlighted as a cabbie. But now why not floor the pedal on profits by running the company instead? This one couldn't have a better location, an upscale Florida city. It offers round-the-clock taxi service, keeping seven cabs busy and five spares in the garage. Besides the cars and ties to nine reliable drivers, the deal includes an industrial site (worth $100,000) featuring a radio tower and an antenna. The owner will retire, but the night dispatcher will stay on. If you're not looking for a new day job, you'll need to staff up.

PRICE $200,000 (owner will finance $100,000)

OUTLOOK The $10-billion taxi-and-livery industry is speeding along, accounting for about 20% of transit across the United States. The meter looks good on this company, too, thanks to a local rate increase that recently pushed rates to a $1.25 "flag" fee and $1.50 per mile. (Drivers keep their tips plus 40% of daily bookings.) Since there isn't much competition, a new owner could rev up by expanding beyond the current territory of 50 square miles or by adding cabs. The biggest jam-up: finding new, reliable drivers. Another red light: those 1989 Dodge Diplomats won't last forever.

Financials	1994	1995	1996
Gross Revenues	$183,525	$180,525	$210,000
Recast Earnings*	$65,164	$65,588	$96,446

*Before depreciation, interest, taxes, and owner compensation

PRICE RATIONALE Keep your feet on the brakes with this one. For cab companies, two valuation methods are typically used: Take 45% of annual gross sales, which gives you a price of about $86,000 (using a three-year average of about $191,000). Or take 80% of annual adjusted earnings. That's about $61,000 (based on a three-year average of about $76,000). Add the value of the company's real estate, and you get a ballpark price between $160,000 and $186,000. Get in or slam the door.

PROS Great weather and plenty of customers, so long as all those sunbirds keep flocking to Florida.

CONS If this deal isn't structured right, you may not be able to afford suntan lotion. —*Jill Andresky Fraser*

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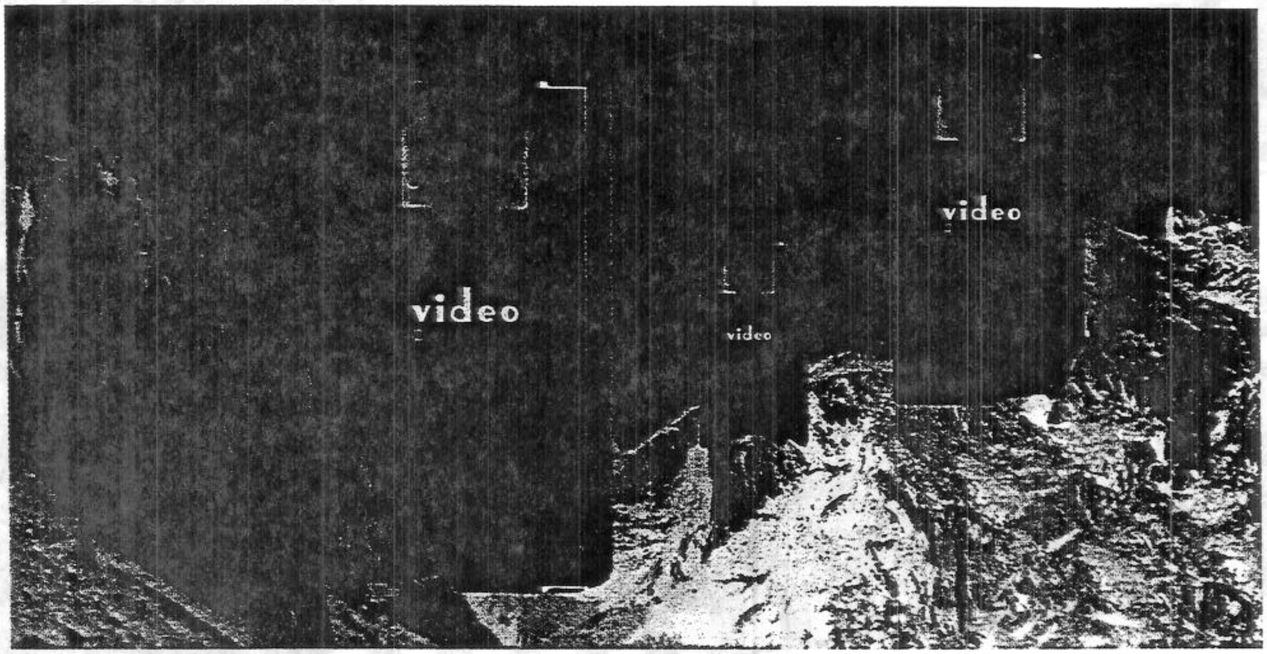
May 1997 VOL. 19 NO. 6

ILLUSTRATION: DENNIS IRWIN



Business for Sale: *Rocky Mountain Video Distributor*

THE BUSINESS Check out this hot title: a video distributor whose niche—groceries, convenience stores, and motels—nets more profits during this owner's 10 days of work each month than many businesses do full-time. This trade is called "racking." The owner sticks to small towns in Colorado, Utah, Arizona, and New Mexico to avoid competition from larger or lower-priced distributors, and he charges a hefty 70% commission for renting his 25,000-tape collection to mom-and-pop retailers. Assets include $500,000 worth of tapes and about 70 clients locked in with one- to five-year contracts. The owner needs cash to develop a parcel of land that he owns.

PRICE $650,000 (owner financing with 30% down)

OUTLOOK The multibillion-dollar video business looks strong, and so does this racker's growth prospects, especially if the new owner works a few more days a month to expand the client list and territory. Sales could also be boosted by offering more video games and software. Then load the tapes and games into your mobile library (a '96 Chevy van) and visit your customers.

Financials	1994	1995	1996*
Gross Revenues	$370,087	$339,799	$370,000
Recast Earnings**	$152,668	$161,574	$165,000

*estimated

**before interest, taxes, depreciation, and owner's compensation

PRICE RATIONALE Start from this premise: distributors typically sell for about 1.5 to 2 times their recast earnings. If a new buyer could push the business's net profit to $300,000 or higher by working full-time, a good sale price might range from $450,000 to $600,000. Nervous about making that leap of faith? Consider this: Since rackers own large inventories of tapes, the right valuation method might approximate the one typically used for video retailers (which generally go for 1.5 to 2 times recast earnings *plus* the value of their inventory). That could push this company's value a good bit higher.

PROS A home-based business that's actually profitable, plus the chance to watch movies.

CONS What if all those Western hicks start nixing video flicks?

—*Jill Andresky Fraser*

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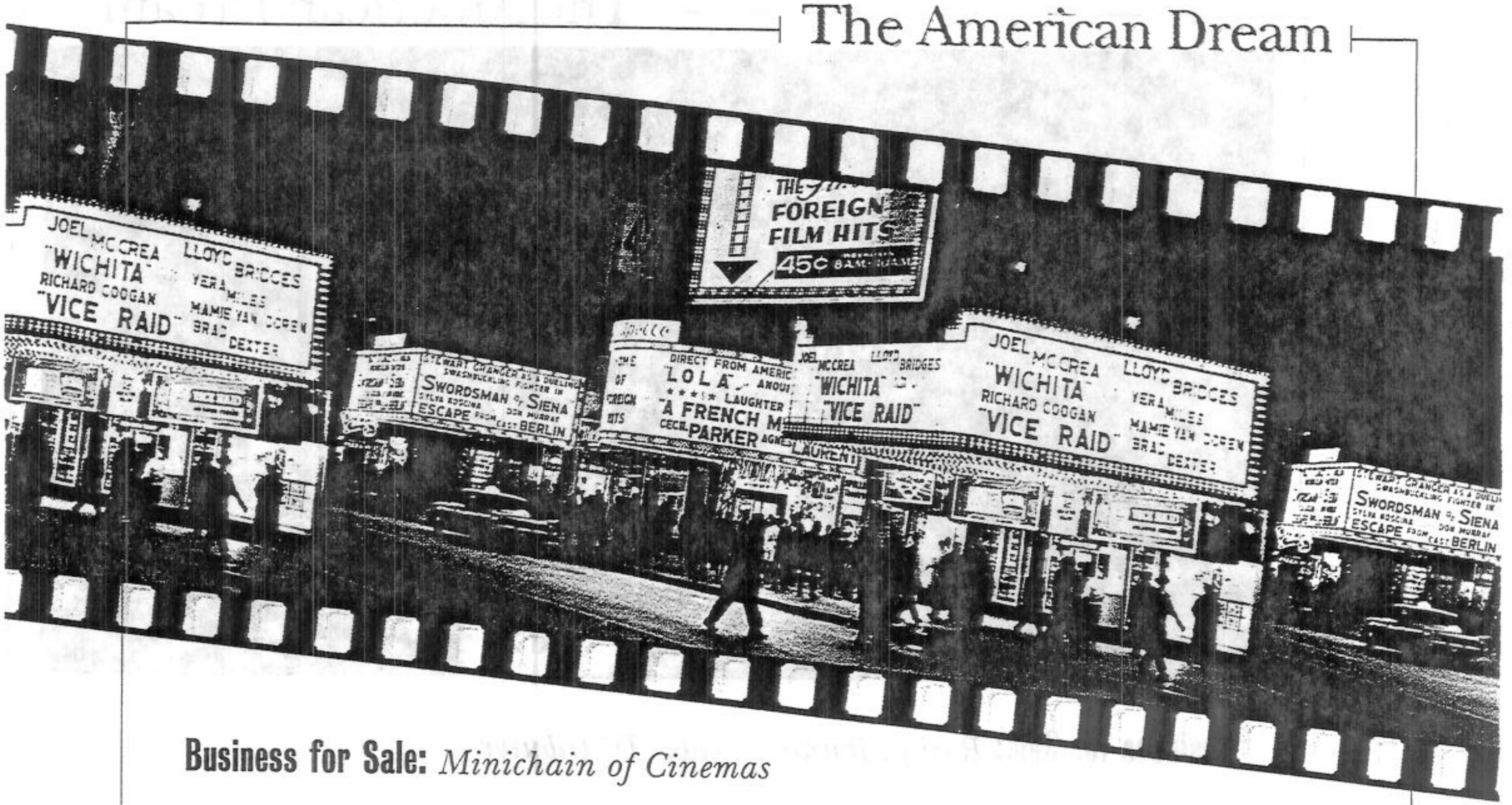
April 1997 VOL. 19 NO.

PHOTOGRAPH: FRANCISCO CACERES



Business for Sale: *Minichain of Cinemas*

THE BUSINESS You've always dreamed of seeing your name in lights. So consider this chain of eight budget-oriented movie theaters, all in suburbs of major northeastern cities. The starring attractions include a computer system that helped the current absentee owner track ticket and concessions sales. The owner is ready for new challenges; his managers and regional directors should stay on for the next show.

Financials	1994	1995	1996**
Gross Revenues	$3,600,000	$3,700,000	$4,000,000
Recast Earnings*	$400,000	$200,000	$500,000

*before depreciation, interest, taxes, and owner compensation
**estimated

PRICE $3,000,000

OUTLOOK On the whole, cinemas wouldn't win any Academy Awards for fast growth: ticket revenues rose by only 9% from 1990 through 1995. But budget chains do nicely, especially when they're the only low-cost player in town (as this chain is, in all its locations). Because this company focuses on second runs, its film-leasing costs are only 35% to 40% of ticket sales, compared with 90% or so for new releases. A new buyer might raise the $1.50 ticket price; the other way to script growth is to add locations, at $250,000 a pop.

PRICE RATIONALE Unfortunately, the price may be as overinflated as Demi Moore's salary. Movie houses seating more than 1,000 typically sell at a multiple of six times recast earnings. But for small chains like this one, four times earnings is a better bet. This chain's erratic earnings pattern complicates the calculation. For a fair bid, potential purchasers might want to calculate the average of the past three years' earnings ($367,000). Multiply that by four, and start haggling at about $1.5 million. The chain will probably sell somewhere between there and $1.8 million (four times $450,000, the average of 1994 and 1996's rosier income picture).

PROS You'll be a star if you can figure out how to raise prices while keeping budget-minded customers.

CONS Pay too much for this deal, and you'll drown in more red ink than *The Scarlet Letter* did.

—Jill Andresky Fraser

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March 1997 VOL. 19 NO. 3

PHOTOGRAPH: UPI/CORBIS-BETTMAN

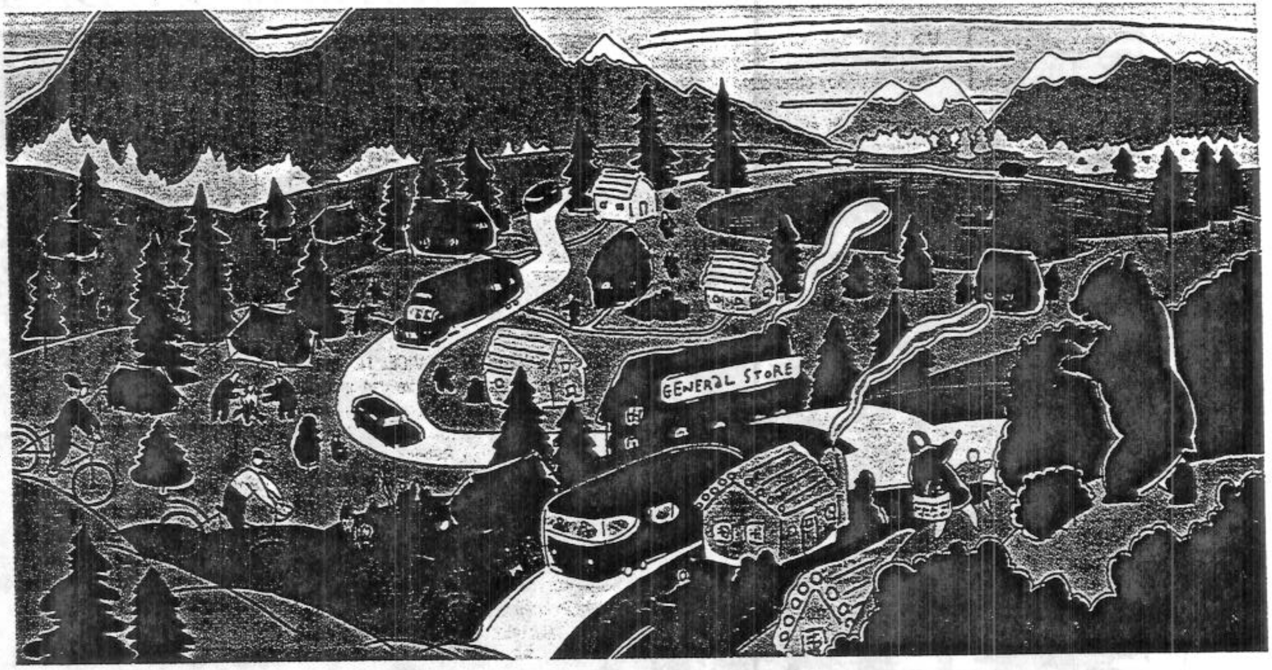

ILLUSTRATION: WARD SCHUMAKER

Business for Sale: *Northwest Camping Retreat*

THE BUSINESS How far from the corporate ladder do your fantasies take you? How about a 12.5-acre lakeside resort with plenty of repeat business from bear hunters, snowmobilers, and families with recreational vehicles? What this 51-year-old facility lacks in glitz it makes up for with an unbeatable location, near national forests and a major highway. Seasonal attractions include fishing, berry picking, hunting, cross-country skiing, and dogsledding. (And you thought your schedule was hectic!) Buy in and you get seven cabins, 34 RV or camping sites, and a general store. The owners are ready for new challenges; you'll probably need two full-time managers, plus a few part-timers.

Financials	1994	1995	1996
Gross Revenues	$212,856	$202,460	$214,000
Recast Earnings*	$64,944	$64,820	$72,658

*before depreciation, interest, taxes, and owner compensation

PRICE $550,000 (50% owner financing possible)

OUTLOOK The United States' 8,000-plus privately owned campgrounds are doing just fine, racking up 90 million camp nights annually. Resorts like this one, serving budget-conscious vacationers, should thrive regardless of where the economy heads. You could boost sales by gearing advertising toward snowshoers and mountain bikers, or by adding new attractions such as guided hunts. There's plenty of room for new RV slots, too, at a cost of just $5,000 for each "slab."

PRICE RATIONALE A well-priced business like this one may be even better than a fire-toasted marshmallow. Campgrounds with small to midsize RV facilities tend to sell for 7 to 7.5 times recast earnings, plus the value of store inventory. Using the average of the past three years' recast earnings ($67,474), you'll get a range of $472,318 to $506,055. Add inventory, around $14,000, and you're ready to close the deal.

PROS With views and recreational opportunities this good, you could feel as if you're on vacation 365 days a year.

CONS If you succeed in attracting more year-round vacationers, you'll spend those 365 days working instead.

—Jill Andresky Fraser

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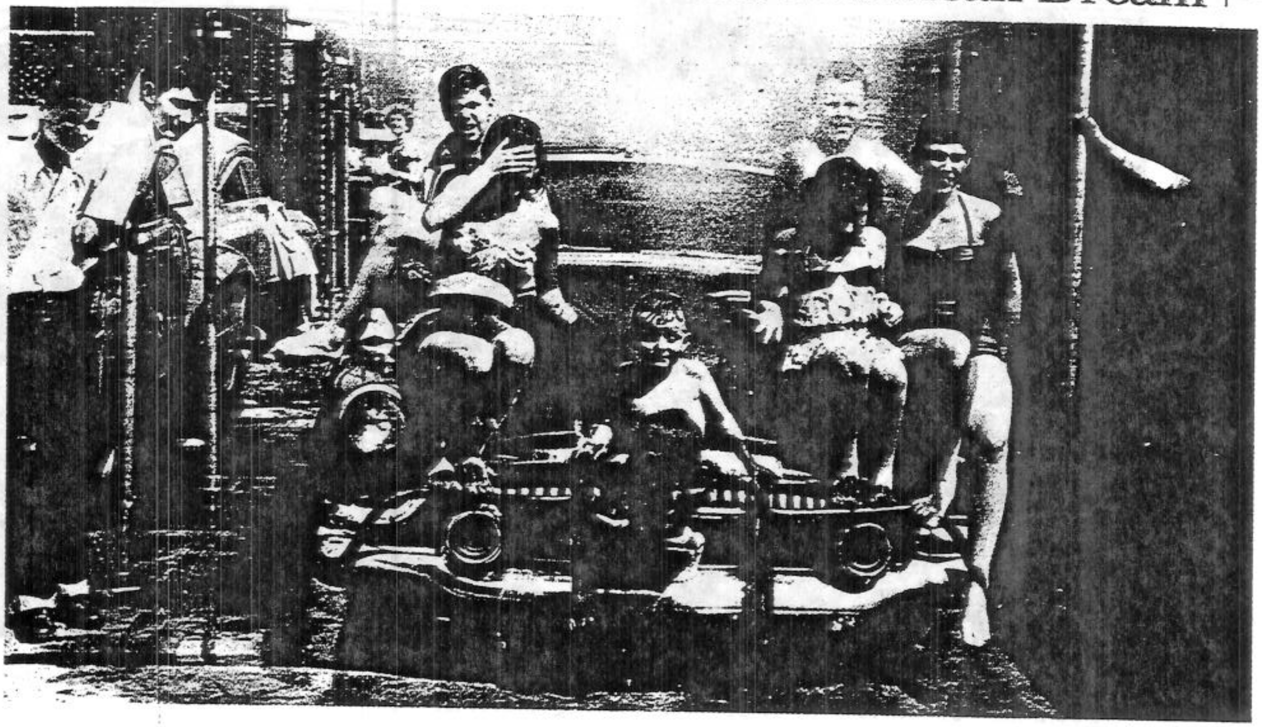
August 1997 VOL. 19 NO. 11



Business for Sale: *Southern Car Wash*

THE BUSINESS Looking to clean up on an investment? Drive through this full-service Georgia car wash, which scrubs about 2,000 cars a month for an average per-car revenue of $13.78, well above the industry norm. Car-wash investments live or die by their location and equipment. This business looks squeaky-clean: it's near a major highway, and although the facility is 30 years old, it has recently been renovated. The owner is ready to retire.

PRICE $400,000 (owner financing possible)

OUTLOOK With an estimated $30 billion in revenues, the United States' 75,000 car washes are thriving. So is this company, thanks to the completion of a two-year highway-expansion project: first-quarter sales for 1997 were up by more than 40%, compared with the same period last year. A new owner could soap up sales even more by staying open evenings and Sundays, or by advertising pricey high-end services. The best news? This facility could handle increased volume of 50% to 60% without hiring more staffers or investing in additional equipment.

Financials	1994	1995	1996
Gross Revenues	$242,791	$262,934	$270,194
Recast Earnings*	$54,680	$76,130	$77,829

*Before depreciation, interest, taxes, and owner's compensation

PRICE RATIONALE Full-service car washes tend to get valued in one of two ways. The simplest: multiply annual gross revenues by one. If you rely on the owner's post-highway-construction projections of $337,742 for '97, this deal looks pricey. Or multiply recast earnings by 1.75 to 2.25 (for $136,200 to $175,115, using 1996 results) and then add the value of fixed assets ($185,000), for a price of $321,200 to $360,115. A recent trend toward industry consolidation could push the price even higher.

PROS With the right location, up-to-date equipment, and a good purchase price, a well-run car wash could be a money machine.

CONS Price this deal wrong and it's you, not your car, that will take a bath. —*Jill Andresky Fraser*

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July 1997 VOL. 19 NO. 10

PHOTOGRAPH: CORBIS BETTMANN

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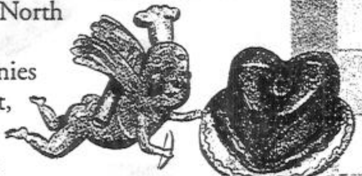
WHARTON REPROGRAPHICS

Where Are They Now?

A Business for Sale update

WE FIRST RAN THE AMERICAN DREAM: BUSINESS for Sale in November 1990. The company featured was a San Francisco restaurant/pub with an asking price of $750,000. Though the restaurant received 100 queries, it eventually was pulled off the market. That was true of about a third of the 61 companies featured through November 1995. One of those, a Wyoming dude ranch, received more than 500 queries, a record for the American Dream. Asking prices of companies pulled off the market ranged from $110,000 for a Michigan airplane brokerage to $5 million for a North Carolina golf resort.

Just over a third of the companies we featured were sold. (See chart, right.) The Nevada casino was on the market for the shortest length of time: two months. Thirteen of the 23 companies sold were on the market for a year or more. The only company that sold for its asking price, $40,000, was the Wisconsin chocolate shop.



Sales are pending for 2 of the American Dream companies; 4 are out of business.

Twelve, listed below with the dates they appeared in the magazine, are still for sale.

▼

VERMONT COUNTRY INN (January 1991)
IDAHO UP-COUNTRY RANCH (June 1991)
FAMILY-RUN CHILD-CARE CENTER (September 1991)
SOUTH CAROLINA MINIATURE GOLF COURSE (May 1993)
SOUTHERN SHORT-LINE RAILROAD (January 1994)
MAINE HOMEMADE-ICE-CREAM PARLOR (September 1994)
750-ACRE THEME PARK (November 1994)
NEBRASKA CHRISTMAS-TREE FARM (December 1994)
NEW ENGLAND COUNTRY STORE (May 1995)
UTAH NATURAL- AND GOURMET-FOODS MARKET AND CAFE (July 1995)
MASSACHUSETTS GARDEN CENTER (October 1995)
CALIFORNIA ARCHITECTURE FIRM (November 1995)

SOLD

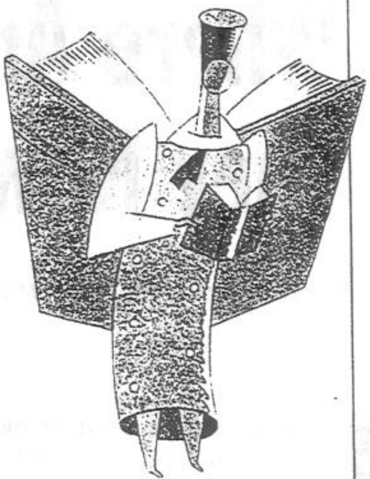
Company (issue it was featured in)

CALIFORNIA VINEYARD/WINERY (April 1991)
SEATTLE BOOKSTORE (August 1991)
MAINE MODEL-SHIP MAKER (October 1991)
ARIZONA AM-RADIO STATION (November 1991)
NEW HAMPSHIRE COUNTRY STORE (December 1991)
MINOR-LEAGUE BASEBALL FRANCHISE (January 1992)
WASHINGTON SKI MOUNTAIN (May 1992)
TEXAS DRAG STRIP (July 1992)
VINTAGE IDAHO MOVIE THEATER (August 1992)
ISLAND CRAFTS CATALOGER (January 1993)
FLORIDA BILLIARDS ROOM (March 1993)
NORTH CAROLINA MOTORCYCLE DEALERSHIP (April 1993)
ARIZONA BOWLING CENTER (June 1993)
FLORIDA TRAVEL AGENCY (July 1993)
NEW ENGLAND ROWING-EQUIPMENT MANUFACTURER (August 1993)
NEVADA CASINO (November 1993)
MIDWEST RECORD-STORE CHAIN (December 1993)
VIRGINIA FRENCH BAKERY (February 1994)
ALASKA CHARTER-FISHING SERVICE (July 1994)
CALIFORNIA DIVING MAGAZINE (October 1994)
CALIFORNIA COMEDY CLUB (January 1995)
WISCONSIN CHOCOLATE SHOP (February 1995)
OKLAHOMA FITNESS CENTER (June 1995)

—Compiled by Christopher Caggiano and Robina A. Gangemi

Asking price	Selling price	Real estate included?	Asking price as a multiple of earnings	Asking price as a % of sales	# of inquiries	How long on the market
9 million	$4 million	Yes	3.0	137%	25–30	1.5 years
$62,000	$8,500[a]	No	8.8	62%	50	1.5 years
$365,000	$331,000	No	5.0	129%	200+	5–6 months
$650,000	Unknown	Yes	7.7	192%	50	2–3 years
$325,000[b]	$345,000[c]	Yes	6.5	79%	30	1 year
3 million	$2.5 million	No	Unknown	208%–250%	60	6 months
Best offer	Unknown	Yes	NA	NA	6	5 months
$500,000	Unknown	Yes	3.5	161%	24	9 months
$135,000	$100,000	Yes	7.3	180%	12	1 year
$150,000	$127,500	No	1.9	52%	250+	1 year
$190,000	$60,000	No	3.5	74%	100+	6 months
.1 million	$900,000	No	3.7	41%	4	14 months
.6 million	$1.3 million	Yes	7.5	279%	15–20	9 months
$150,000	$105,000	No	1.2	9%	15–20	2–3 months
$550,000	$440,000[d]	No	Unknown	65%	200	6 months
.3 million	$1.5 million	Yes	6.4	126%	35–40	2 months
.5 million	$500,000	No	3.8	41%	15+	2 years
$275,000	Unknown	No	3.4	122%	40	2 years
$586,000	Unknown	Yes	5.9	64%	12	1 year
$500,000	$110,000[e]	No	10.0	154%	50	2 years
$350,000	$110,000	No	3.6	48%	8	1 year
$40,000	$40,000	No	2.7	75%	200–300	8 months
$185,000	$92,500	No	172.7	382%	20	1 year

[a] for a partial stake; [b] without inventory; [c] with inventory; [d] for an 80% stake; [e] for a 51% stake



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Export Ease

The SBA's Export Assistance Centers provide the help (and money) you need.

BY PHILIP LADER
ADMINISTRATOR OF THE SBA

SEEKING EXPORT assistance or financing? Drop in to one of the 11 U.S. Export Assistance Centers (USEACs) nationwide.

USEACs are multiagency offices providing information on all federal export assistance and finance programs. Representatives from the Small Business Administration, the Department of Commerce and the Export-Import Bank of the United States (Ex-Im Bank) are there to help you—with immediate assistance or referrals.

Another source of export financing assistance is the funding offered through the new Export Working Capital Program (EWCP). Many small firms often have difficulty obtaining short-term working capital for export sales since lenders frequently consider these loans riskier and less profitable than long-term domestic loans. Under the EWCP, the SBA guarantees 90 percent (up to $750,000) of commercial loans for single transactions as well as for groups of multiple sales.

One of the EWCP's biggest advantages is that the SBA looks primarily at specific transactions when reviewing your application and considers the viability of each transaction, the reliability of the repayment sources and your performance ability. The terms of the sale are structured to minimize the risk to you, the lender and the SBA.

Previously, only lenders could request an SBA guarantee on a loan; through the EWCP, exporters can now apply directly to a USEAC for a Preliminary Commitment (PC), the first step in getting an EWCP loan. With a PC, your business is in a better position to find a lender willing to extend credit.

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Good catch: *An SBA export loan helped Robert Manwaring win an international contract.*

To make the program even more user-friendly, the SBA has blended its EWCP with Ex-Im Bank's. The SBA handles guarantees of $750,000 and less, while Ex-Im Bank handles all guarantees over that amount.

■ A PHONE CALL AWAY

Whatever your export financing needs, each USEAC has at least one full-time trade finance specialist on staff to assist you. In addition, the SBA's resource partners, particularly the Service Corps of Retired Executives and the Small Business Development Centers, are either on site or only a phone call away to provide finance or marketing trade assistance.

For Waste-Tech Inc., a Libertyville, Illinois, wholesaler and manufacturer of high-tech pollution control equipment, the EWCP was the key to doing business overseas. "I couldn't have done it without the SBA's support," says Waste-Tech owner Robert Manwaring, who obtained an SBA-guaranteed bank loan for $833,000 to handle a $1.27 million contract with an Italian mining company. "The [EWCP] promotes a can-do attitude."

You don't have to be high-tech to benefit from the EWCP, either. Western Sunflower Co., which mills, bags and exports sunflower seeds, is one of the top private-sector employers in the town of Colby, Kansas. With an EWCP loan of $575,000, Western Sunflower is becoming a top dog overseas as well: Almost 90 percent of the company's sales are exports to Spain, Taiwan, the Virgin Islands and Mexico. Says company CEO Al Gerstner, "This is an excellent program with a quick turnaround."

With 11 USCEAC sites now open, the SBA is hoping to open four more by year's end.

To cover more territory, the SBA and the Department of Commerce are also creating 85 District Export Assistance Centers (DEAC), each connected with the main USEAC in its region. Staffed mostly by Commerce Department personnel, these one- or two-person offices are typically housed at local trade information sites such as chambers of commerce. So even though your city may not have a USEAC, chances are you can access one through a DEAC. 🄴

For more information on how USEACs or the EWCP program can help you, contact your local SBA office, or call the SBA's Answer Desk at (800) U-ASK-SBA.

Harvard Business School

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The DAG Group

As they began their drive from Washington to Boston on a cold January day in 1991, Chris Hackett and Val Rayzman felt that time was running out.

It had been a year since they'd begun trying to build a chain of upscale drycleaners. They had become industry experts -- the next day they were to give a presentation to a drycleaning convention. But hadn't yet bought a single store and were running out of money. They had to do something soon: start or buy a store, or abandon their drycleaning pursuit altogether.

Background

Chris and Val were classmates in the MBA program at Harvard Business School. Val had spent four years as an investment banker in New York, and Chris had sold capital equipment in Cincinnati for his family's company. The two friends described how they came to be interested in the drycleaning industry.

> We were determined not to go back to our former careers, and the on-campus recruiting choices seemed unsatisfactory. We both wanted to run our own business, but neither of us had any idea what to do after graduation.
>
> One fall evening, while batting around different business ideas, Val brought up drycleaning. "Look Chris, here is an industry that is fragmented, undifferentiated, has low entry barriers, and is something that people use all the time. Why can't we do what others did to supermarkets, pizza parlors, and office supply stores?" The thought of transforming a sleepy industry with unappealing stores and poor service was exciting. As a first step, we arranged to do a field study in service management [a student research project] in the spring term with the goal of developing a plan to build a chain of drycleaning stores. We also formed a partnership – the DAG Group, a loose acronym for Drycleaning Acquisition Group.

Valery Rayzman, MBA '90, and Christopher J. Hackett, MBA '90 prepared this case under the supervision of Professor Amar Bhide as the basis for class discussion.

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The DAG Field Study

We worked closely with two large, professionally managed chains in the Boston area. In addition to interviews and plant observations, one of the cleaners also shared the computer data on customers, which we analyzed for retention rates, buying habits, that sort of thing. We traveled the Eastern seaboard visiting drycleaning plants, industry shows, associations, suppliers, brokers, etc. Finally, we conducted several focus groups with business school students and their partners.

The Industry

Drycleaning stores, we found, are either "plant" stores or "dry" stores. Plant stores have their own drycleaning and shirt laundry facilities (see Appendix) or sometimes only drycleaning facilities. Dry stores may be part of a chain serviced by a central plant or independently owned and operated, contracting to have their cleaning done. There are about 18,000 plant stores and 10,000 to 20,000 dry stores in the United States.

About 95% of all outlets are single stores owned by a proprietor. Some owners of plant stores have opened dry stores in order to fill plant capacity, and then there are a few large chains. The largest chain belongs to the Johnson Group, a publicly traded British company, which operates 360 stores under 10 different trade names. The Johnson group bought DryClean USA, a franchising company with 184 stores, 82 of which are company owned. The next largest is Concord Custom Cleaners, which was purchased by a large drugstore chain and owns 180 stores from Illinois to Florida.

Real spending remained constant throughout the 1980's. The International Fabricare Institute, the industry association, estimated the total U.S. drycleaning revenue in 1990 to be approximately $4 billion. And the number of establishments increased sharply in the 1980s; in some parts of the country, long-established cleaners found themselves surrounded by three or four new stores.

Price competition is intense and the use of coupons is widespread because many owners, who don't have reliable cost data, believe their costs are fixed. Prices vary by region, depending on the local labor rates; drycleaning averages about $3.50 for a typical one-pound piece and regular laundry $1 for the typical half-pound piece. Per capita spending is about $16 per year, but it is not evenly distributed.

The quality of cleaning and service has deteriorated. Many cleaners feel they cannot afford to upgrade their plants, hire better employees, or settle customer claims generously. In many cities, drycleaners routinely make the Better Business Bureau's "Top 10" list of customer complaints. Customers often switch cleaners; a 35% to 40% turnover of high-volume customers is typical for a store.

Suppliers and Inputs

Space requirements range from 1,300 to 2,000 square feet for plant stores down to as little as 500 square feet for a dry store. Many stores are located next to grocery stores and can expect to pay $18 to $30 per square foot for that kind of location, compared with the grocery store itself, which may negotiate space for $10 per square foot. Drycleaning stores are also found in strip malls -- almost every mall developer tries to include one.

Most large cities have three or four distributors who sell drycleaning and laundry equipment. Another set of distributors provides cleaners with supplies such as hangers, poly-bags, and supplies. Since plants generate hazardous waste, they also have to contract with disposal companies such as SafetyKleen. The solvent used in the drycleaning process is classified as a _possible_ carcinogen by the EPA, and there is pressure to reclassify it as a _probable_ carcinogen. Rules about emissions of solvent vapors are expected to be tightened, which will force many drycleaners to upgrade their equipment.

Some equipment distributors (and others) have started selling "turnkey" operations. They lease space in a shopping mall, put in the required equipment, counters, conveyors, etc., operate it for six months or a year, and then sell the complete store. Stores are usually priced at a multiple of sales rather than profits, because few cleaners keep good financial records. Typically, multiples range from 0.75 to 1.25 times sales, with the best locations commanding up to 1.5 times sales. Newly arrived immigrants often buy turnkey stores, and, we are told, exaggerated claims and various "hard sell" techniques are common.

Customer Segments

Our customer interviews, focus groups, and analysis of computer records led us to believe that drycleaning customers can be segmented into three categories:

- _Heavy users_ need drycleaning for their everyday wear. Although a minority, heavy users represent the bulk of drycleaners' revenues. They launder shirts often and dryclean more expensive clothes. Heavy users value convenience and location -- time is essential, since most of them are career-focused, affluent professionals. While a few heavy users care a great deal about how their clothes are cleaned, most only notice obvious problems such as missing buttons or shrinkage. And despite complaining about drycleaning costs, very few of them know just how much they pay. They are not really price sensitive.
- _Light users_ dryclean their clothes regularly, but they do not need the store services for their daily attire. Although they do care about convenience and

quality, they are much more likely than heavy users to use promotional offers and switch cleaners.

- *Occasional users* use drycleaners less than once a month, and some only seasonally. Price is usually their primary consideration, and loyalty is minimal.

Key Success Factors

We noticed that the most profitable cleaners were often surrounded by competitors who offered cheaper prices or better quality. Cleaners seemed to prosper in spite of tough competition when they:

1. Offered the most consistent (if not always the best) quality in their area -- the buttons were attached, there were no stains, etc. Quality inspection was often done by the manager after all work was finished.
2. Were run by owners who thought of themselves as businesspeople, not just drycleaners. They understood their costs, analyzed and monitored operations closely, and attached importance to hiring, keeping, and developing good employees. The successful chains hired professional managers to run their stores.
3. Provided the best customer service of all cleaners in the area: long hours, quick turnaround, prompt settlement of claims, knowledgeable and pleasant counter clerks, etc.
4. Operated stores with outstanding location and appearance. They were located on busy streets, usually in freestanding buildings with good parking and easy access. The buildings looked nice, and the customer areas were brightly lit and pleasant.

Strategy for DAG

We concluded that the main driver of a drycleaner's profitability, just as in most service businesses, is its customer-retention rate. Therefore, we decided our strategy would be to:

1. Build large plant "superstores" capable of supporting about $750,000 in sales. Our interviews suggested that the "average" store revenues of $250,000 per year could be doubled without a proportionate increase in fixed labor, equipment, or real estate costs. Beyond $500,000, net margins would not increase significantly, although total profits would.

2. Locate the stores in affluent, dense areas where there are many heavy users. All our stores would be in freestanding buildings on busy streets with good visibility and ample parking.

3. Offer services that appeal to high-usage customers. These services would include long hours, being open on Sundays, same-day service, credit cards, and alterations. We would back these services with an unconditional money-back guarantee.

4. Price at a 10% to 15% premium to the area average.

Dynasty Cleaners

Chris and Val ranked major metropolitan areas on such factors as average age, average income and density. Based on these rankings, they decided to build their chain in Washington, DC. First, however, they investigated an opportunity to buy Dynasty Cleaners, a large chain in Indianapolis:

> In the course of our study, we had met an HBS alumnus, Michael Boulder, who was now a venture capitalist at Rainier & Co. in New York. Michael too had investigated drycleaners in a second-year field study, and his team had come close to purchasing Dynasty Cleaners. The deal had fallen apart after several months of discussions because one of the two brothers who owned Dynasty was reluctant to sell.
>
> We met Michael and a partner from Rainier. The meeting went very well, and at the end Michael told us: "Work on your study, and look for deals at the same time. If you are serious about drycleaning, we'll finance your deal either through Rainier or privately."
>
> We maintained contact with Michael, who seemed genuinely interested in financing a drycleaning deal. When we finished our study, he called the owners of Dynasty and found that the chain was struggling and both brothers now wanted to sell. Michael arranged for all of us to meet, and shortly after graduation, we drove to Indianapolis.
>
> We spent the next three days with Michael performing due diligence. Dynasty had 4 plant stores and 26 dry stores. Most of the stores were in strip malls and were in poor condition. Most of the plants were old, the equipment was poorly maintained, and safety rules appeared to be disregarded, raising a possibility of future liability.
>
> Dynasty was one of the oldest cleaners in the United States, and well known in Indianapolis. Apparently, it competed on price; its windows were painted with various price specials, and it distributed many coupons. We called people in the area at random, pretending to do a telephone survey. When asked them what they thought of Dynasty, we heard comments like:

- "Of course I know Dynasty."
- "Their quality is bad. I'd never use them."
- "I take my inexpensive clothes to them because they have good deals, but I take my good clothes somewhere else."
- "I used to be their customer, but they always lose my stuff."

We looked at Dynasty's leases and found that many of the company's stores had short leases and their rents could be increased. And payroll records showed that employee turnover exceeded 300% annually, which meant that an average employee remained with the company less than four months. The situation was even worse among counter clerks, who were paid minimum wage. The average-sales-per-store figure of $115,000 seemed discouragingly low.

During our 17-hour ride to Indianapolis, Val had remarked "Here we are, barely graduated and we can buy a $3.5 million company. What could be better than to own something and to turn it around?" Now, although the thought of running a large business was still tempting, we decided that Dynasty was too risky and it would be wiser to look for better deals in Washington, D.C.

Mr. Hackett and Mr. Rayzman Go to Washington

We loaded our belongings on a truck and set out for Washington. Through a college friend of Val's, we found a house under construction where we could stay one month for free. On the Delaware Turnpike, a special report came on the radio: Iraq had just invaded Kuwait. "Not a good omen," we thought.

Chris took a job at a local drycleaner to better understand the business. He did not mention his education beyond high school; his pay was $6 per hour. A month later, Val joined another cleaner, also at $6 per hour. Chris left his cleaner after 10 weeks and went to the industry association's 3-week General Drycleaning course. Meanwhile, using the Yellow Pages and a Dun and Bradstreet list (under SIC codes 7215 and 7216), Val put together a list of all drycleaners in the area .

We saw as many cleaners as we could. We also talked to suppliers, business brokers, and drycleaners to determine which businesses might be for sale. Based on criteria developed during our field study, we looked at all major drycleaning plants in the Northern Virginia and Montgomery County areas. We eliminated Washington, D.C. proper, because we wanted to be where people drove rather than walked to their cleaners. We believed that drivers would be more willing to go a few extra blocks than those who walked. Finally, we wanted to find an acquisition that was in good shape (no large losses, broken equipment, etc.) and able to support an increased volume of business.

At the same time, we looked into starting a drycleaning store from the ground up. This involved looking for things like a suitable site, proper equipment, and financing.

Superb Cleaners

In August, we presented our field-study findings to a group of the largest drycleaners in the United States. This meeting was sponsored by a chemical supplier. After the presentation, the president of the company introduced us to a friend who was considering selling his Northern Virginia cleaner, Superb Cleaners.

Superb was located in a freestanding building on a busy street. Its owner had a number of drycleaners and other business interests; he did not take an active part in day-to-day management. The man who had managed Superb died of a sudden heart attack, and the business had declined. Superb, nevertheless, did quality work and had a neat appearance. The on-site plant was spacious and had enough capacity to sustain volume far greater than excess of its current $386,000.

On the other hand, at least $40,000 would be needed for a computer system and washing machines -- Superb's plant did drycleaning but not laundry. Some investment would also be necessary to bring the customer area up to our standards.

The location was not ideal. The building was on the "going home" side of a divided street, so that people driving to work could not make the left turn to enter the parking lot. Industry experts say that it is better to be located on the "going to work" side of the street. The business also appeared to be overstaffed given its volume. Finally, the owner seemed uneasy about allowing detailed due diligence to be performed on site.

The owner was asking $450,000 for Superb with some participation in the future upside, and he didn't seem very flexible on price. The owner gave us a P&L of Superb, but it was muddied by charges for his other businesses. From our general observation of the operations -- we weren't allowed detailed due diligence on site -- we constructed an approximate income statement for the Superb. Based on these numbers, we decided to look at other deals first.

Situation in January 1991

A few months after looking at Superb, Chris and Val took stock of where they stood:

We have spent six months in the area and have found very few cleaners that meet our criteria. Most stores are located in strip malls and do not have room for capacity expansion. This was especially true of cleaners in desirable neighborhoods. Quite apart from the crucial issue of price, there are fewer than 10 cleaners we would even consider buying.

Starting our own store is also a challenge. We have very little personal capital or houses to borrow against. We would have to get a large portion of our capital from Michael Boulder and Rainier, and we may not be able to give them the 25% to 50% return they seek. Washington rents are high, and the economics of a store don't appear to be great.

A going business with customers, goodwill, and an existing work force can be improved incrementally and is less risky than a start-up. More important, an existing cleaner can be purchased with little equity. Sellers will usually take back a note for one-half to two-thirds of purchase price, typically for seven years with 10% interest.

Our personal finances are deteriorating rapidly. The Superb deal has a lot of problems, but it is the best cleaner we have found for sale so far. We have invested over a year of our lives in this project; we don't want to give up now.

Appendix: Plant Operations and Process

Drycleaning traces its roots back to nineteenth century France, when garments were disassembled and cleaned in turpentine. Now fabrics are cleaned with a detergent dissolved in a solvent (typically percloroethylene or _perc_). Fabrics typically drycleaned include wool, silk, and linen. Drycleaning machines are like very large home washing machines using solvents instead of water. The solvent is recycled into the machine after it is filtered through paper cartridges (or diotomacious earth). The cartridges constitute hazardous waste and must be handled and disposed using established procedures. In addition, the solvent is distilled periodically to remove the dirt and chemicals that have dissolved in it. There have been no significant technological innovations in this basic process in the last 20 years.

Regular laundry is done the same way it is at home but with a bigger washing machine. This process is usually reserved for cottons and some synthetic materials. Most of a typical cleaner's laundry consists of dress shirts worn with suits.

A clerk receives garments from customers at the store counter and makes an initial inspection, looking for stains or obvious damage. The customer is then given a receipt and the counter clerk makes a preliminary sort between garments that are to be drycleaned and those to be laundered. At this point, large orders may be divided into smaller lots (most cleaners limit any order size to six pieces of laundry or three pieces of drycleaning).

The garments are moved to the mark-in station, where they are further inspected and tagged. Each piece receives a color-coded tag that contains a series of numbers that identifies who the customer is, what lot the garment will be cleaned with, and when it is due to be completed. The garment inspection at this point involves looking for buttons that are broken or may break, finding rips and tears, removing items left in pockets, etc. The garments are then divided into lots to be cleaned. A lot is the number of pieces that may be processed by the plant in a given amount of time. The clothes are further divided into groups that can be cleaned together. For drycleaning, this classification is usually done by color (light or dark) and weight. For laundry, classification is done by color and whether or not the shirts are to receive starch.

The clothes are moved to the processing part of the store where they are inspected for spots. Any spots are then manually removed by applying cleaning agents to the clothes. The garments are then weighed and loaded into the drycleaning or washing machine. A typical drycleaning machine can handle 50 lbs. of garments per load.

The drycleaned garments go through a cleaning, extracting, and drying cycle (the whole cycle takes about 45 minutes). After the garments are dry, they are removed from the machine and put on hangers. The garments are inspected for spots and, if spots are found, returned to the spotter for further attention. Otherwise, the garments are pressed. Laundered items follow a similar course except that they are removed from the washing machine wet; drying occurs during the subsequent pressing. All clothes are then inspected and put on hangers.

After the garments are pressed and hung, they are moved to the order- assembly area, where they are put with the other garments on the same order, bagged, and filed on a conveyor to wait for customer pickup.

Exhibit 1 Drycleaning Establishments in Selected Cities

City	Total Number of Stores	Number of Stores in Largest Chain
Atlanta	450	17
Boston	480	14
Cincinnati	210	30
Chicago	1000	10
Minneapolis	230	20
San Francisco	350	5
St. Louis	350	19
Washington, D.C.	300	7

Source: Yellow Pages

Exhibit 2 Drycleaning vs. Other Consumer Services

	Dry-cleaning	Auto Repair	Fast Food
Industry Size ($millions)	$3,998	28,664	139,282
Sales per Store ($thousands)	$ 188	250	419
Payroll	37%	27%	26%

Source: 1987 Census

Exhibit 3 Cost Structure of Typical Drycleaning and Laundry Plant

(Approximately $250,000 per year)	100.0%
Expenses	
Labor	30.0%
Management Expense	10.0
Rent	10.0
Supplies	7.5
Utilities	5.0
Payroll Taxes	4.0
Equipment Depreciation	4.0
Interest Expense	3.0
Legal, Accounting, Travel	3.0
Promotion	3.0
Insurance	2.5
Equipment Maintenance	2.0
Other	10.0
Total Expenses	94.0%
Profit Before Taxes	6.0%

Source: Industry interviews and cost surveys

Exhibit 4 Dynasty Cleaners: 1990 Income Statement

Revenue	
Drycleaning	$2,413,300
Laundry	584,200
Other	507,650
Total Revenue	$3,505,150
Expenses	
Production Labor & Supplies	$1,225,000
Building & Machinery	355,000
Selling & Delivery	392,000
Store Costs	1,230,000
General & Administrative	367,100
Employee Benefits	21,500
Total Expenses	$3,590,600
Profit (Loss)	($85,450)

Exhibit 5 Dynasty Cleaners: Balance Sheet as of 12/31/90

ASSETS		
Current Assets		
Cash	$ 56,200	
Accounts Receivable	134,000	
Inventory	48,000	
Deposits	7,300	
Prepaid Expenses	5,000	
Total Current Assets		$250,500
Fixed Assets		
Furniture & Fixtures	$ 15,000	
Machinery & Equipment	117,300	
Vehicles	31,900	
Capital Lease Equipment	99,000	
Leasehold Improvements	106,000	
Total Fixed Assets		$369,200
Other Assets		
Goodwill	$ 1,500	
Investment in Subsidiary	13,500	
Officer's Life Insurance, Cash	16,000	
Deposit-Workman's Compensation	1,000	
Intercompany Transfers	(17,700)	
Total Other Assets		$ 14,300
Total Assets		$634,000
LIABILITIES & SHAREHOLDERS' EQUITY		
Current Liabilities		
Accounts Payable	$237,000	
Accrued Rent	40,000	
Accrued Salary & Wages	37,000	
Accrued Payroll Taxes	35,000	
Accrued Expenses	1,400	
Accrued Real Estate Tax	(4,500)	
Taxes Withheld	49,500	
Misc. Employee Deductions	6,500	
Total Current Liabilities		$401,900
Long-Term Liabilites		
Bank Notes	$275,000	
Equipment Loan	15,000	
Leases Payable	113,000	
Total Long-Term Liabilites		$403,000
Total Liabilities		$804,900

Shareholders' Equity		
Capital Stock	$ 18,000	
Paid In Capital	27,000	
Retained Earnings	(340,400)	
Current Earnings	124,500	
Total Shareholders' Equity		($170,900)
Total Liabilities and Shareholders' Equity		$634,000

Exhibit 6 **Superb Cleaners: 1990 Income Statement**

Revenue	$386,600
Expenses	
Nonmanagement Labor	$171,000
* Cost of Goods Sold	69,200
Management Labor	35,000
** Rent	30,000
Utilities	23,200
Supplies	18,200
Promotion	8,000
Equipment Maintenance	6,000
Claims	5,200
Miscellaneous	2,000
Interest Expense	4,400
Depreciation	1,700
	$373,900
Profit (Loss)	$12,700

*COGS comprised primarily shirts that were cleaned off premises.
**The building was owned by Superb's proprietor. Market rent was estimated to be $70,000.

Exhibit 7 **Capital Projects Estimated for Superb Cleaners**

High Priority	
Computer System	$12,000
Shirt Unit (Used)	10,000
Washing Machine (Used)	5,000
Employee Uniforms	2,000
Subtotal	$29,000
Lower Priority	
Customer Area Improvements	$15,000
Decorative Awning for Building	15,000
Sign	14,000
Subtotal	$44,000
Total	$73,000

Exhibit 8 Start-Up Capital Expenditure Required for DAG Superstore
(Assuming $750,000+ Annual Volume)

	Quantity	Cost
Cleaning Equipment		
50 lb. Dry-to-Dry Cleaning Machines	2	$45,000*
35 lb. Washer/Extractor Machines	2	7,500*
Utility Tub	1	250
Commercial Washing and Drying Machines	1	2,000
Spotting Board	1	750*
Pressing Equipment		
Utility Presses	2	5,000*
Hot Head Press	1	3,000*
Pants Legger	1	3,000*
Pants Topper	1	2,000*
Suzy Body Formers	3	4,500*
Puff Irons	3	1,500*
Shirt Pressing Unit	1	20,000*
Button Machine	2	1,500*
Commercial Sewing Machine	2	1,500*
Utility Equipment		
12 Horsepower Boilers	2	10,000
10 Horsepower Compressors	2	10,000
Vacuum System	1	3,000
Hot Water Tank	1	1,500
Cooling & Ventilating System	1	15,000
Automatic Conveyor Systems	6	20,000
Management Information System	1	15,000
Building Improvements		
Sliding Doors for Drive-Through	1 set	2,000
Counters & Call Office Improvements		36,000
Work Stations & Other Facility Improvements		15,000
Total Capital Cost		$225,000

*Note: Used equipment; purchased for approximately 50% of original equipment cost.

Exhibit 9 **Pro Forma Income Statements for DAG Superstore Start-up**

	Year 1	Year 2	Year 3	
Revenue	$250,000	$500,000	$750,000	
Expenses				
Rent and Other Real Estate Costs	$75,000	$75,000	$75,000	10
Counter and Marking Labor	22,500	45,000	67,500	9
Dry Cleaning Labor	22,500	45,000	67,500	9
Pressing Labor	22,500	45,000	67,500	9
Management Salaries and Costs	40,000	50,000	60,000	8
Supplies	20,000	35,000	52,500	7
Utilities	20,000	25,000	37,500	5
Payroll Taxes	12,500	25,000	37,500	5
Promotion	30,000	20,000	20,000	2.67
Insurance	15,000	20,000	20,000	2.67
Equipment Maintenance	7,500	10,000	15,000	2
Government Regulation Compliance	12,500	12,500	15,000	2
Legal, Accounting, Travel	12,500	10,000	15,000	2
Compensation Insurance	2,500	5,000	7,500	1
Office Expenses	5,000	5,000	7,500	1
Claims	3,000	5,000	7,500	1
Miscellaneous Expenses	12,000	17,500	26,250	3.5
Equipment Depreciation	22,500	22,500	22,500	3
Interest Expense*	17,500	17,500	17,500	2.33
Total Expenses	$375,000	$490,000	$638,750	85.2%
Income (Loss)	($125,000)	$10,000	$111,250	14.8%

*Assumes a loan of $175,000 at a 10% interest rate.

4

Capacity/Location Decisions

G. Heileman Brewing Company, Inc., the nation's fourth largest brewer, is making a strong move in the South where its sales are only 2 percent of the regional total. By acquiring a modern plant in Georgia as a part of its battle for control of Pabst Brewing Company, Heileman is establishing a beachhead. "When you buy a battleship, you start a war," explains Russell Cleary, Heileman's chairman and CEO. Heileman could have built new capacity, but it is only paying about $17.50 per barrel for the existing brewing capacity compared to $50 per barrel for new capacity. Furthermore, "by brewing the beer in Georgia—instead of brewing it in such distant cities as Baltimore and Evansville, Indiana, and shipping it at high costs to the South—Heileman will be able to cut prices, if necessary, to increase market share."[1]

Videotape prices in the United States and elsewhere began to slide in 1982 when Fuji Photo Film, Hitachi Maxell, and TDK collectively increased capacity by over 90 percent. This massive capacity increase was installed just as industrywide sales declined to a relatively modest 40 percent annual growth rate. While consumers reaped the benefit of very low tape prices, the supply-demand imbalance created havoc in the industry, and it is expected that the overcapacity will not be absorbed for at least two years.[2]

Dow Chemical Company, headed for overcapacity in basic chemicals, is shifting its product strategy toward higher margin specialty chemical products. While overcapacity in its basic chemical operations is not the only reason for the shift, its existence in polyethylene capacity, for example, promised low margins for the future. Dow's announcement that it would end polyethylene capacity expansion projects in progress in South Korea, Saudi

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Arabia, and Yugoslavia and would add specialty chemical capacity had great significance for the industry.[3]

In March of 1983, Domtar Incorporated, Canada's largest maker of fine papers, announced in a *Wall Street Journal* article that it would double the capacity of its Windsor, Quebec, paper mill. The announcement was quite factual but indicated that the mill to be enlarged was operating at a loss. In addition, the announcement stated, "it [the Windsor mill] benefits, however, from a good wood supply and is near the U.S. border for increased access to that market. It provides the best location for significant increases in productive capacity."[4] To whom was the announcement really directed? How did the announcement to increase capacity fit in with the company's strategy?

Finally, Honda of America Manufacturing, Inc., located its auto plant near Marysville, Ohio, partly because the state agreed to build a four-lane highway linking the plant site to the interstate highway system. Now the state of Ohio says the project will not be completed for another six years. How important was the highway to Honda's decision to locate near Marysville? How much will the delay cost in terms of difficulties in employee recruitment, morale, and material transportation cost to and from the plant?[5]

The preceding news items dealing with capacity and location are all suggestive of the significance of capacity/location decisions. In fact, these are the most significant decisions made in terms of capital involved and the care with which they should be made from a strategic point of view. The risks and uncertainties are great because future demand is uncertain at best. Even more significant is the attempt to forecast competitors' behavior. For example, if too many competitors add capacity, as with the previous example concerning video tape, all firms in the industry are likely to suffer. Once established, new capacity remains, and overcapacity can be a problem for the company and the industry far into the future.

The issue of capacity expansion immediately raises the companion issue of *where* to expand in order to improve the firm's competitive position, to counter competitive moves, and to tie into the distribution network effectively.

Capacity/Location as Strategy

Porter[6] states that where there is a "production orientation of management," capacity overbuilding is particularly likely to occur. He indicates a bias of production-oriented managers toward having the shiniest new plant and a perceived risk of being left behind in adding the newest and most efficient capacity. In addition, there may be an engineering orientation toward problem solving and a tendency to regard the problem more in a capacity-planning context of predicting future demands and the possible impact of technology. This translates demands into physical capacity requirements, generates alternate plans related to requirements, and analyzes the economic effects of alternatives. What is left out of the above process is the analysis of possible capacity additions by each competitor, an analysis of the total future industry supply-demand balance, and resulting industry costs and prices.[7] These are critical steps in the strategic aspects of the decision process, and if production executives have tended to overlook them, this may account in part for the fact that they have been left out of strategy formulation in the past.

But if production executives have been partially responsible for excess capacity in the past, they have been only a minor cause. The crucial causes are to be found in market forces and technological, structural, and competitive factors.

The Plague of Overcapacity

Excess capacity is a curse except in situations where increasing demand is explosive and almost certain. Otherwise, overcapacity brings with it higher costs, because of the higher-than-necessary overhead, and lower industry prices. The result is a cost-price squeeze.

There are a number of technological factors that make it difficult to avoid overcapacity at least in the short run. If capacity is to be added, it must be a unit of economic scale so large that it produces excess capacity for some time before before increasing demand can absorb it. Steel production, oil refining, and beer plants are all examples where capacity added must be in relatively large units. But the long lead times in adding capacity exacerbate this problem increasing the risk and making it necessary to watch the actions of competitors closely. A firm that is slow to act may be left out as a reward for risk aversion. The firm that acts quickly will achieve a cost advantage through experience and may increase its market share. Thus, all firms are pressured to act, and the result may be a capacity glut.

An innovation in production technology, such as the oxygen process and continuous casting in steelmaking, has the effect of attracting investment in the new technology to take advantage of its lower costs and improved quality even though adequate industry capacity exists. However, if the exit barriers are high, the existing technology is likely to remain in production and prolong the agony of overcapacity. The result is an industry overcapacity with pressure on the costs of the old capacity as volumes approach break-even levels. The industry overcapacity produces downward pressure on prices resulting in a cost-price squeeze felt particularly by operators of older high-cost facilities.

Dominant buyers, such as the automobile producers, can encourage overcapacity in a supplier group especially with new or innovative components, such as quartz clocks, by refusing all bidders unless they have sufficient capacity available to meet the buyer's requirements. In order to qualify, alternate suppliers provide more capacity than is needed in the industry.

The explosive growth of the personal computer market provides an excellent example of how a large number of firms entering the field can create a down-stream overcapacity problem. They all have the resources to add capacity and are all vying for market share in an attempt to preempt competitors by having capacity available as the market expands. During the explosive growth period, producers must bring capacity on stream rapidly in order to stay in the game. As the market finally saturates, however, overcapacity is almost certain to be a problem.

As the auto industry was recovering from the 1981–83 recession, it refused to accept any price increases from suppliers. The supply industry either held prices or cut them through three years of recession in the auto industry. Suppliers were suffering from severe overcapacity and the constant threat of cheaper supplies from abroad. In this situation, overcapacity weakens supplier bargaining.[8]

Managing the Capacity Expansion Process

A large part of the problem is in managing the potential or real overcapacity in the company and in the industry. Capacity moves can be rather obvious when new products are in their rapid-growth phases. Since the potential costs of lost sales are so great in these instances, capacity expansion is clearly justified when the cost of new capacity is not heavily capital-intensive. There are several well-documented cases of this type—for example, Zenith's expansion of color television capacity in the middle 1960s to take advantage of explosive market growth,[9] or Litton's market opportunity in microwave ovens in the 1970s.[10]

Otherwise, the management problems are centered in what is called *capacity gaming* incorporated with a rational process for determining options, assessing future demands and technological impacts, and evaluating financial flows. The financial evaluation is terribly important, but rather mechanical, and does not accurately represent the nature of the managerial problem. The issue is *which* numbers to insert in the analysis. Given those numbers, comparative evaluation of alternatives is straightforward.

Capacity Gaming

Taking the measure of competitors is critical in part to avoid, where possible, the potentially disastrous effects of industry overcapacity. But in addition, signaling competitors that an expansion is imminent and that it will be in a certain location may be an effective warning for competitors not to go "head-to-head" with expansions of their own.

Announcements

The news announcements cited at the beginning of this chapter may have been of this capacity-gaming type. Heileman Brewing may have been signaling its intentions when it announced plans for expansion into the southern market. But Heileman also indicated that its muscles were strong and that it had advantages of low cost but modern capacity and an already-proven marketing

strategy to ensure success. Dow Chemical's announcement seems to offer a quid pro quo—a withdrawal of expansion plans in basic chemicals for a strong intrusion into the specialty chemicals market. Domtar's announcement that it would double the capacity at its Windsor, Quebec, paper mill may be particularly important in an industry that has suffered the effects of overcapacity in the past. Both the capacity expansion and its location are important in this instance—the wood supply near Windsor couples advantageous costs with the target U.S. market just across the border.

Announcements may be only initial signals. If the move is by an operator in a market niche, such as Domtar's segment in fine papers, it may or may not have a dominant position. The announcement could be tentative—a company's way of waiting to see what the reactions of competitors will be and what kinds of moves will be made. In fact, the *Wall Street Journal* article announcing Domtar's expansion was headlined "Domtar Considering Doubling Capacity." The choice of words can be very important. On the other hand, if the announcement is by a firm like Dow, it will be regarded as the intention of a powerful competitor with the resources to carry out its strategy. Competitors may then make plans that coordinate with rather than fight against an industry leader.

There is a well-documented case of a capacity/location announcement that was intended to be a deception. Carborundum, Inc.,[11] in developing capacity expansion plans for its product CERAMAX in the late 1960s, finally decided on a location near Birmingham, Alabama, because it was in the middle of a rapidly growing market without significant competing capacity. Considerable freight equalization costs made location of new capacity an important strategic cost factor. But the intermediate strategy of first starting a smaller expansion of an existing plant had advantages of timing and meeting more immediate demand requirements. In order to lock down its penetration of the Southeast expanding market with strategically located capacity, Carborundum announced the plan to build the Birmingham plant, purchased property, and even broke ground. In the meantime, it secretly expanded the existing plant. The competition was "faked," and Carborundum was in a position to develop the Birmingham facility according to a more advantageous schedule in relation to the Southeast market while meeting its more immediate capacity needs by a smaller expansion of the existing plant. Carborundum's action in this instance has some of the elements of what Porter calls a *preemptive strategy*.

Preemptive Strategies

The entire thrust of a preemptive strategy[12] is to deter entry by competitors. As noted previously, some of the elements of preemption exist when a market is expanding rapidly and there is a high probability that "you can't lose." Examples of the past were color television and microwave ovens during their rapid expansion phases, and the current example is the personal computer market where companies are experiencing growth rates of 50 to 60 percent and more.

These are dramatic situations where the greatest risks are in foregoing the margins of lost sales. But the more classic preemptive strategy would be for a company to build enough capacity to meet the entire industry demand thus foreclosing competitive entry. Such a move provides maximum economies of scale coupled with experience-curve pricing—both factors that would tend to discourage potential competitors. The preemptive firm needs to be extremely well financed because of capital-investment requirements, and must absorb initial losses due to long-term price policy. Preemption is obviously a risky strategy—if unsuccessful it guarantees overcapacity and price warfare.

Porter[13] states that there are several conditions necessary for the success of the strategy which is risky partly because *all* of the following conditions must be satisfied:

- Large capacity expansion relative to expected market size.
- Large economies of scale relative to total market.
- Significant experience curve effects.
- Credibility of the preempting firm to carry out the strategy.
- Ability to signal preemptive motive before competitors act.

The capacity gaming process is fascinating and is a part of the never-ending rivalry among the competitors in an industry. The capacity planning process, which is discussed next, is more difficult to carry out on a strictly rational basis because of the dynamics of the gaming process.

Capacity Planning[14]

Given the moves and countermoves that represent capacity gaming and predicting all competitors' capacity actions and resulting industry capacity and prices, there are additional elements of manufacturing strategy that come under the heading of capacity planning. They involve the identification of options and capacity balance, the evaluation of small versus large expansion units, contrasting fundamental situations for commodity-type products versus new products and risky situations, and the effects of multiple plants on capacity, location, and distribution system decisions.

Capacity Requirements and Options

Long-range forecasts of demand are difficult at best. There are always contingencies in the competitive situation, but recessions, wars, oil embargoes, or sweeping technological innovations can also have important effects. Furthermore, capacity planning for mature commodity-type products is rather different than it is for new products and other risky situations.

Mature Commodity-Type Products

The demand for mature commodity-type products in the long term is relatively predictable and is commonly based on pacing factors, such as population growth, replacement markets, and so on. Causal forecasting methods, such as regression and econometric models, are of value in these situations. Of course, many exceptions to this general predictability can be cited. Product substitutions can upset the normal, orderly market development of a commodity, such as the substitution of plastics for aluminum and steel in many applications, and a new technology can change the competitive economics in a mature industry like textiles or printing. Nevertheless, compared to the risky capacity-planning decisions that will be discussed later, commodity-type products enjoy predictability.

Given long-range predictions of demand, capacity requirements must be generated, and it is unlikely that the needs will be uniform throughout the production system. A balance of subunits exists that reflects the lumpy nature of capacity. For example, the existing receiving, shipping, and factory warehouse area may accommodate a 50 percent increase in output, but the assembly line may already be at full capacity. The capacity gaps can then be related to future capacity requirements as shown in Table 4–1.

In Table 4–1, capacity slack and gaps are shown for three selected planning years through 1993. These predicted requirements are based on the best forecasts available and should reflect appropriate contingencies. In this case, they involve a growth rate of approximately 10 percent per year. Contingencies can also be taken into account by optimistic and pessimistic predictions of requirements.

TABLE 4–1
Predicted Requirements, Current Capacities, and Projected Capacity Differences

	Capacity, Units per Year			
	Current 1983	*1985*	*1988*	*1993*
Predicted capacity requirements	10,000	12,000	15,000	20,000
Machine shop capacity	11,000	—	—	—
Capacity (gap) or slack	1,000	(1,000)	(4,000)	(9,000)
Assembly capacity	10,000	—	—	—
Capacity (gap) or slack	—	(2,000)	(5,000)	(10,000)
Receiving, shipping, and factory warehouse capacity	15,000	—	—	—
Capacity (gap) or slack	5,000	3,000	—	(5,000)

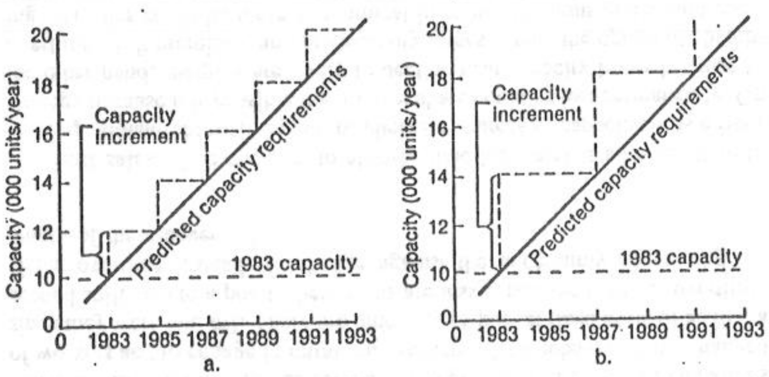
Source: Elwood S. Buffa, *Modern Production/Operations Management*, 7th ed. (New York: John Wiley & Sons, 1983).

The projected gaps in capacity are shown in parentheses in Table 4–1. There is currently slack capacity in the machine shop and in the receiving, shipping, and warehouse areas. Within two years, however, both the machine shop and the assembly line will need expansion. These capacity gaps increase as shown for 1988 and 1993, while the service areas of receiving, shipping, and the factory warehouse will have adequate capacity through 1988.

Identifying the size and timing of projected capacity gaps provides an input to the generation of alternate plans. Demand is met by providing the required capacity partially through alternate capacity sources—such as overtime and multiple shifts—or some lost sales may be absorbed. The required capacity can be provided in smaller increments as needed or in larger increments that may involve larger initial slack capacity. Existing facilities may be enlarged, the expansion could be in a new location, or the entire operation could be relocated.

Large or small capacity increments. When a company enjoys relatively steady demand growth, the issues are *how* and *when* to provide capacity rather than *if* it should be added. Using the data for expected capacity requirements from Table 4–1, there is a linear growth in requirements of 1,000 units per year. Should the capacity be added more often in small increments to keep up with demand (Figure 4–1a) or in large increments less frequently (Figure 4–1b)?

FIGURE 4–1
Capacity Increments to Meet Requirements (*a*) Through 2,000-unit Increments Every Two Years and (*b*) Through 4,000-unit Increments Every Four Years



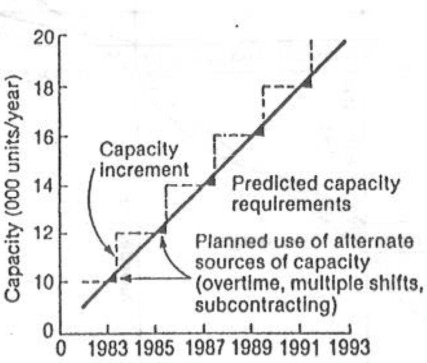
Source: Elwood S. Buffa, *Modern Production/Operations Management*, 7th ed, (New York: John Wiley & Sons, 1983).

In either situation there will be slack capacity immediately after an addition. The slack capacity is reduced as demand increases and, assuming perfect timing, falls to zero when the next increment to capacity is installed. Whether small or large capacity increments will be more economical depends on the balance of incremental capital and operating costs for a particular situation and whether or not economies of scale exist. While a unit of capacity added now may cost less than a unit added later, the slack capacity must be carried as additional overhead until it is actually productive.

Alternate sources of capacity. A factor influencing capacity planning is whether or not alternate sources of capacity can be used near the capacity limit. In Figure 4–1, demand is assumed to be met through regular productive capacity, however, Figure 4–2 assumes that the timing of capacity additions makes it necessary to use overtime, multiple shifts, and subcontracting if feasible. The cost of using these capacity extenders is in trading off some of the costs of carrying slack capacity against the incremental costs of overtime and multiple shift premiums, productivity losses resulting from pushing capacity beyond normal limits, and subcontracting. Whether or not alternate sources of capacity will be economical for a particular situation depends on the balance of incremental capital and operating costs.

Overtime and subcontracting are also used to offset risks when expansion is uncertain. For example, as the auto industry was recovering from the 1981–

FIGURE 4–2
Capacity Increments Timed to Use Alternate Sources of Capacity to Meet Requirements



Source: Elwood S. Buffa, *Modern Production/Operations Management*, 7th ed. (New York: John Wiley & Sons, 1983).

83 recession, it avoided the recall of many workers and the installation of additional shifts by scheduling large amounts of overtime. Workers who had been recalled were working as much as 12 hours per day in order to meet the demand. Adding shifts forces companies to provide full benefits to hundreds of workers and to engage in retraining workers whose jobs may have changed since they were laid off. There are other out-of-pocket fixed costs of adding a second shift. Up to a point, these costs are less expensive than the overtime. Using overtime instead is a hedge against the uncertainty concerning the length of the recovery.[15]

Lost sales. The decision to absorb some lost sales is an alternative to meeting demand through regular or alternate sources of capacity. It is a risky strategy because it is possible that market share could be lost permanently. On the other hand, margins are likely to decline near capacity limits because of overtime, shift premium, and productivity losses. Thus, the option of absorbing lost sales could be more economical in some situations and would commonly produce conflicting reactions from marketing, production, and finance executives. Nevertheless, it is an alternative that needs to be considered in an expansion strategy and is likely to be economical in capital-intensive industries.

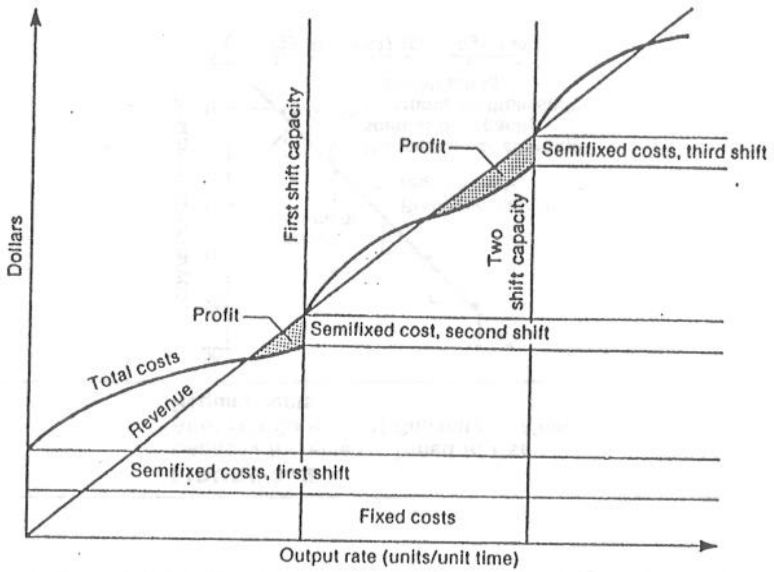
Cost behavior in relation to volume. Figure 4–3 provides a general picture of what happens to costs as volume increases through first and second shifts. The cost behavior at capacity limits is of particular interest because these are the conditions that prevail when capacity is added. Near these limits, variable costs increase as a result of increased use of overtime and subcontracting and because of productivity losses.

On the other hand, when new capacity is first installed, it is not fully utilized unless the expansion is long overdue. When new capacity is installed, variable costs are likely to be relatively high, reflecting poor utilization of labor and other resources. But the new capacity relieves the stress on existing facilities, eliminating the need for overtime or other sources of alternate capacity.

The combination of new and existing capacity finally reflects a variable cost structure that improves as increasing demand uses up the slack capacity. The fixed costs of existing capacity are spread over an increasing number of units as volume is increased through first shift capacity limits and so on. Thus, the fixed cost per unit declines as existing facilities become more fully utilized.

Economies of scale. The concept of an optimum output for a given facility comes from the cost structure. Figure 4–4 shows unit variable and

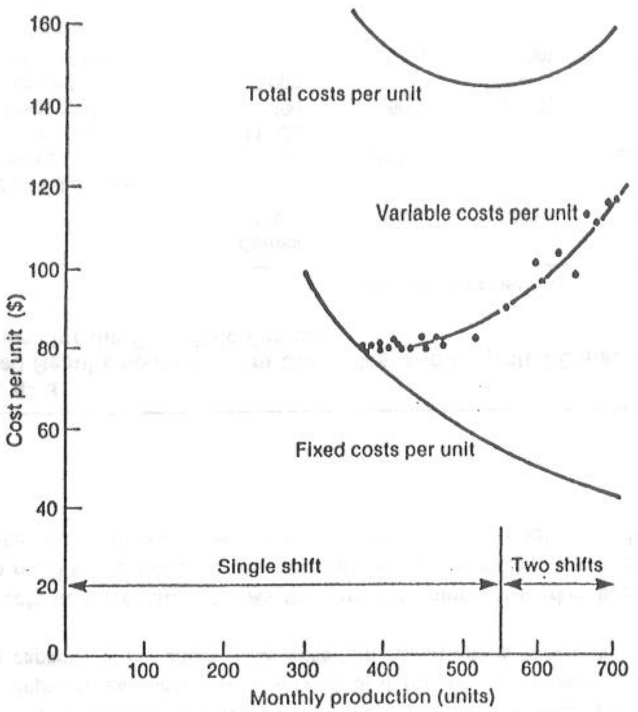
FIGURE 4–3
General Structure of Costs over a Wide Range of Volume



fixed cost data for an enterprise at different rates of output. Variable costs per unit increase depending on the amount of overtime used for the direct and indirect work for and the costs incurred by management decisions to expand or contract the work force. The fixed cost per unit curve in Figure 4–4 declines as the fixed costs are spread over an increasing number of units. The total unit cost curve is then the sum of the variable and fixed costs and is minimized at an output rate of about 525 units per month for the plant illustrated.

There are usually economies of scale that occur because of lower fixed costs per unit, lower variable cost per unit, or both. The lower fixed costs may occur because plant and equipment costs of larger plants are less than proportional to capacity. Larger plants are likely to have a better balance of subunits resulting in less slack capacity. Lower variable costs of larger plants occur because larger plants may justify more mechanization and automation. The effect is shown in Figure 4–5 for three successively larger plants—the larger plants result in lower optimum total costs per unit.

FIGURE 4–4
Unit Variable, Fixed, and Total Costs for a Plant in Relation to Volume



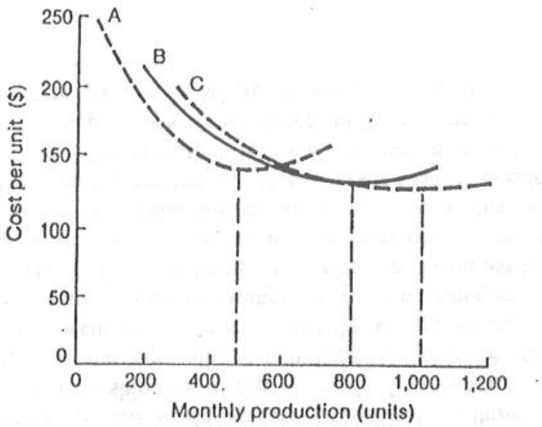
Source: Elwood S. Buffa, *Modern Production/Operations Management*, 7th ed. (New York: John Wiley & Sons, 1983).

Evaluation of alternatives. Alternate plans may involve different size units that may differ in their productivity, the timing of the investments, the use of alternate sources of capacity, and so on. Some alternatives may involve the evaluation of lost sales as well. Because all these costs are future costs and the time spans may be long, it is important to use a discounted cash-flow analysis. There are many examples of these kinds of analyses.[16]

New Products and Risky Situations

Predicting capacity requirements is much more difficult for new products even if they are already in their rapid developmental phase. In addition, there are situations involving mature, commodity-type products, such as oil refining, where the capacity-planning environment is risky because of unstable political factors. In such instances, optimistic and pessimistic forecasts can have a profound effect on capacity requirements.

FIGURE 4–5
Economies of Scale Illustrated by Three Successively Larger Plants



Source: Elwood S. Buffa, *Modern Production/Operations Management*, 7th ed. (New York: John Wiley & Sons, 1983).

Optimistic and pessimistic capacity projections. Suppose that the product represented in Table 4–1 is in the rapid developmental stage of its life cycle. There would be considerable uncertainty about the future market because of an uncertain economic climate and developing competition. Table 4–2 provides optimistic and pessimistic capacity predictions that affect future requirements drastically. The optimistic schedule assumes approximately a 20 percent per year compound growth rate in demand, and the pessimistic schedule assumes a 5 percent growth rate. A 20 percent growth rate might be justified given a favorable economic climate and a slight gain in market share. A 5 percent growth rate might be logical given the success of foreign competition and a smaller market share.

While Table 4–1 showed the expected capacity gaps and slack for a commodity-type product, these projections must be hedged for a more risky situation. Tables 4–3 and 4–4 show the widely differing capacity requirements for optimistic and pessimistic predictions. The optimistic schedule requires large capital additions right away and huge capital additions 10 years

TABLE 4–2
Expected, Optimistic, and Pessimistic Predictions of Requirements

	Capacity, Units per Year			
	Current, 1983	*1985*	*1988*	*1993*
Expected capacity requirements*	10,000	12,000	15,000	20,000
Optimistic requirements	10,000	14,500	25,000	62,000
Pessimistic requirements	10,000	11,000	12,800	16,000

*From Table 4–1.

later. Failure to provide the capacity might miss the market resulting in very large opportunity costs of lost sales. In assuming the pessimistic forecast, only modest amounts of capacity are needed within five years, and these requirements might be provided by multiple shifts and overtime. Even the 10-year capacity gap seems relatively modest for the pessimistic forecast. Making capacity plans under these uncertain conditions is very tricky.

Effects of uncertainties. As the personal computer market began to develop rapidly, the need for new capacity became apparent. But how fast would the market develop? Would market shares remain stable? Would the growth pattern repeat that of similar products? Similar uncertainties occurred in other new products, such as color TV, pocket calculators, and microwave ovens.

TABLE 4–3
Predicted Requirements, Current Capacities, and Projected Capacity Differences for the Optimistic Forecast

	Capacity, Units per Year			
	Current, 1983	*1985*	*1988*	*1993*
Predicted optimistic capacity requirements	10,000	14,500	25,000	62,000
Machine shop capacity	11,000	—	—	—
Capacity (gap) or slack	1,000	(3,500)	(14,000)	(51,000)
Assembly capacity	10,000	—	—	—
Capacity (gap) or slack	—	(4,500)	(15,000)	(52,000)
Receiving, shipping, and factory warehouse capacity	15,000	—	—	—
Capacity (gap) or slack	5,000	500	(10,000)	(47,000)

Source: Elwood S. Buffa, *Modern Production/Operations Management*, 7th ed. (New York: John Wiley & Sons, 1983).

TABLE 4–4
Predicted Requirements, Current Capacities, and Projected Capacity Differences for the Pessimistic Forecast

	Capacity, Units per Year			
	Current, 1983	*1985*	*1988*	*1993*
Predicted pessimistic capacity requirements	10,000	11,000	12,800	16,000
Machine shop capacity	11,000	—	—	—
Capacity (gap) or slack	1,000	—	(1,800)	(5,000)
Assembly capacity	10,000	—	—	—
Capacity (gap) or slack	—	(1,000)	(2,800)	(6,000)
Receiving, shipping, and factory warehouse capacity	15,000	—	—	—
Capacity (gap) or slack	5,000	4,000	2,200	(1,000)

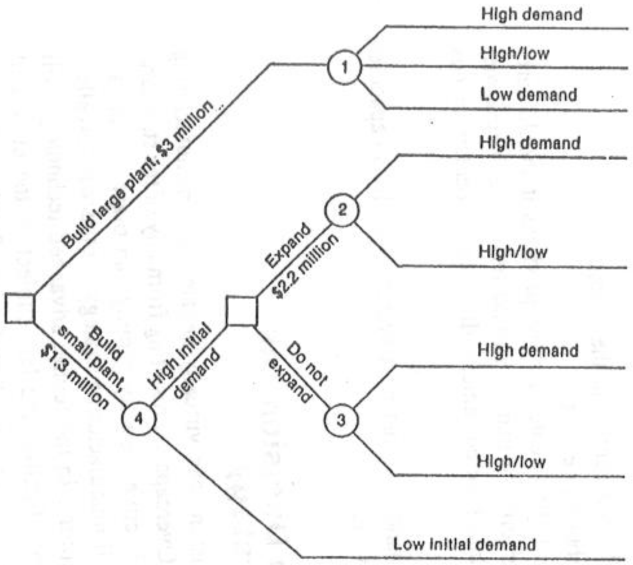
Source: Elwood S. Buffa, *Modern Production/Operations Management*, 7th ed. (New York: John Wiley & Sons, 1983).

Market uncertainties might also occur in commodity-type products that have ordinarily enjoyed steady growth because of imminent technological changes or political uncertainties. For example, if the Panama Canal were closed, transportation costs would increase substantially for those companies that used the canal for shipment of raw materials. Furthermore, if demands are uncertain, lead times for building new capacity can be of great importance. Events can occur within the lead times that change the logical alternatives. The most dramatic current example is in the development of nuclear power plants. The lead time to bring a new plant on stream has been in the range of 9 to 12 years—the first two to four years being dedicated to site preparation and environmental studies. Experience shows that within that time frame, the expected demand for electric power changed drastically, and environmental and political factors have had tremendous impact.

Capacity planning in such circumstances must take into account the uncertain events. Here is a situation where the methodology of decision trees can be helpful.

Diagramming uncertainty effects. Figure 4–6 is an example of a decision tree used for the capacity planning of a new product. The beauty of a decision tree is that the anatomy of the decision is shown in the structure of the tree. The small squares in Figure 4–6 represent decisions to be made,

FIGURE 4–6
Decision Tree for a Risky Capacity Expansion Project



while the circles are events, such as the occurrence of demands. Demand was uncertain for the example situation because the product was new and because competitors were known to be developing similar products. The capacity-planning issues were centered in plant size, expandability of small plants, and demand uncertainties. Investment for the large plant was $3 million, while the small plant was estimated to cost $1.3 million. One of the alternatives was to hedge by expanding the small plant in two years at a cost of $2.2 million if initial demand was high. Several market scenarios were framed with specific forecasts representing high demand, high demand in the first two years followed by low demand reflecting keen competition, and low demand.

Evaluation of risky alternatives. The analysis of the decision tree in Figure 4–6 involves the cash flows of all alternatives. For this situation, the cash-flow analysis shows that the minimum cost decision is to build the small plant without planning to expand it in two years. If initial demand were high after building the small plant, a complete reassessment could be made based on new market demands and other uncertainties that might have developed in the interim period. It is interesting to note that if discounted cash-flow techniques had not been applied, which simply weighted the raw cash flows, the decision would have been to build the large plant. Obviously, discounting is extremely important when cash flows occur over a long period of time—the wrong evaluation methodology can change decisions of major significance.

Multiplant Location

The location of a new plant within a system of existing plants must reflect the influence of the existing locations as well as the usual assessment of economic and subjective factors. Each alternate location requires a different allocation of capacity to markets in order to minimize overall costs. It is the combination of production *plus* shipping costs that determine the competitive strength of a given location. In one actual example, the capacity-expansion alternatives favored one location because of both advantageous production and shipping costs. Location 1 involved the expansion of existing facilities with the same technology. Location 2 involved technological improvements, but the plant's size was limited by the available site. Location 3 was a larger plant with the latest technology and enjoyed economies of scale. When the distribution costs from each of the three locations were taken into account, the following delivered costs per ton made Location 3 the obvious choice. In the case of a price war, which alternative would you prefer?

Production Plus Shipping Cost When Shipped to	*Location 1, Production Cost = $126/Ton*	*Location 2, Production Cost = $115/Ton*	*Location 3, Production Cost = $105/Ton*
Northeast	$126/ton	$124/ton	$123/ton
Northcentral	$139/ton	$116/ton	$123/ton
Southwest	$145/ton	$127/ton	$110/ton
West	$145/ton	$126/ton	$123/ton

The new modern capacity in Location 3 provided an important competitive advantage.

Locational Dynamics

After capacity in a multiplant situation is built, locational dynamics affect the way the available capacity should actually be used. Especially in the situations of declining demand, it may be possible to meet total demand while operating fewer plants by resorting to alternate sources of capacity, such as overtime, multiple shifts, and subcontracting where possible. Both production and distribution costs would increase, but there is a trade-off in the form of reduced out-of-pocket fixed costs for the closed plant. Whether or not the altered capacity/location strategy is preferable depends on a balance between these objective cost factors and subjective factors involving employee relationships, community relationships, and so on. Obviously, the U.S. automobile industry readjusted its capacity/location strategy drastically during the 1981–83 recession.

Finally, distribution systems for commodity-type products have undergone enormous development in recent years and were paced by mathematical programming techniques coupled with computer power. Particularly in commodity-type product systems, the distribution costs must be regarded as an integral part of the processing costs. Therefore, to be competitive on a cost basis requires attention to distribution costs, which are subject to an experience curve as are plant processing costs. Modern decision-support systems for distribution include both plant and distribution center location in order to optimize the system as a whole. For example, the system installed at Hunt-Wesson Foods was reported to have realized annual cost savings in the low millions.[17] The system is regarded as dynamic and is being reevaluated annually with new decisions on:

- The number of distribution centers in the system.
- The location of distribution centers.
- The size of each distribution center and the products it should carry.
- Which distribution center(s) or plant(s) should service each customer.
- Allocation of each plant's output among distribution centers or customers.

Therefore, the changing demands are met by a system that shifts capacities and locations in a strategic way.

Capacity/Location Decisions as Manufacturing Strategy

Poor capacity-expansion decisions can virtually negate good manufacturing strategy in other dimensions. Overcapacity resulting from any of the structural causes discussed or from ineffective capacity gaming can place a manufacturer in a cost-price vice even if manufacturing strategy is otherwise excellent in relation to those of competitors. In the future, advanced technology will make production capacity more flexible and less subject to the effects of product and schedule changes. Those firms that develop facilities with the greatest flexibility will have a competitive edge in reacting to major shifts in product design and demand.

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Inc. ONLINE

COMPAQ

Title: **Twenty-eight Steps to a Strategic Alliance**

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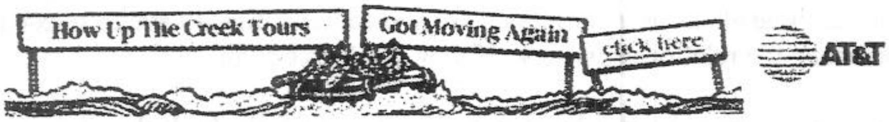
Summary: How Calyx & Corolla, a mail-order flower seller, developed strategic alliances before the company was off the ground.


How Up The Creek Tours Got Moving Again click here AT&T

Think strategic alliances are only for high-flying high-tech companies? Think again. When Ruth Owades first crafted close partnerships with suppliers in her industry, she didn't even have a company yet

* * *

The first time Ruth Owades went into business for herself, she did it the conventional way. While working at CML Group, in Acton, Mass., then the corporate parent of four mail-order catalogs, Owades hatched an idea for a catalog of upscale gardening paraphernalia. Avant Gardener, she wanted to call it; she would operate it under the CML umbrella. When CML decided to pass, the Harvard M.B.A. set out on her own and spent three years, beginning in 1978, growing the new company, renamed Gardener's Eden. In the process she opened up a new catalog-industry niche. But what was conventional about Gardener's Eden was that it was an independent venture -- Owades and her business were, for all intents and purposes, going it alone.

Not so Owades's second time around. Calyx & Corolla, which she founded in 1988, is also a catalog operation and sells flowers and plants. Orders are processed at the Calyx office in San Francisco, and the flowers are shipped directly from growers to customers via overnight delivery. But whereas few partnerships were key to the success of Owades's first business, her second venture is *completely dependent* on alliances with the growers and the shipper.

That second venture was a long time coming. Back in 1982 Owades sold Gardener's Eden to Williams-Sonoma, a cataloger offering the financial resources needed to expand Gardener's further. The deal required that Owades relocate to San Francisco and run Gardener's for five years -- which she did, building it to $15 million in yearly sales. In 1987, at age 39, she had a choice: stay or go. "I decided that if I didn't leave, I'd wake up 20 years later and be doing the same thing," she says today. "I certainly sensed there wasn't a future for me in the corporate management of Williams-Sonoma, because no women had made it there before, so it just seemed right to sever the ties and find something new to do."

She figured she'd relax. After nine years of high-speed company building, she relished getting back to her tennis game. She took a cheap office in a warehouse district of San Francisco. She spent more time at her weekend house, in Napa Valley, where her husband, Joe, a beer designer admired in the industry for his work with Anchor Steam ale and Samuel Adams beer, would take over the kitchen with his new concoctions.

Owades also began entertaining at home again, pointedly catching up with friends. She'd stop by the wholesale market near her office and pick up fresh flowers. Which is when the idea for a flower catalog started to dominate her thoughts.

That's also when, slowly, her plot to start a business by allying it with larger, reputable companies began to take shape as well. Though *strategic alliance* has become a hot catchphrase among business thinkers, Owades knew that if the relationships she had in mind were to work, she would have to beat long odds. At best, just one in three alliances in business is truly successful. She'd have to select and recruit her allies wisely and then make the relationships work. If they didn't, she'd fail.

Here is Ruth Owades's story: the step-by-step process by which she built the alliances that brought Calyx & Corolla to life.

Contemplate alone. Owades didn't plan to start another catalog company -- in fact, she had been trying to leave herself open to just about any *other* kind of venture. "For a really long time I had been telling people who had called me for advice that this is not a business to get into anymore," she says. "Expenses are much too high, and the market is flooded."

But the idea of a flower catalog stuck because the concept made sense. Most flowers are cut, transported to a wholesaler, transported to a distributor, transported to a retailer, and transported yet again to a customer -- taking anywhere from 6 to 10 days on average to go from soil to vase. As Owades envisioned it, flowers chosen from a catalog, in which customers could see exactly what they were buying, would be cut one day and reach the recipient the next. Not only would the process put customers more in command of their orders, but the flowers would be more vibrant and longer lasting. By her calculations it could be done at prices comparable with those for ordering flowers via Florists' Transworld Delivery (FTD).

Brainstorm with others. In December 1987 Owades revealed her idea to her husband. "You know, when you have an idea, you're almost afraid to say it to anyone, because you don't want anyone to say, 'That is the dumbest thing I ever heard.' But he said, 'That's really interesting.' "

Research the idea and the industry. "It was a matter of sleuthing. I went to the library and sat in front of the index and looked up everything -- flowers, florists, marketing flowers, advertising flowers -- to see what was happening in the industry generally, but also specifically with distribution. My first job when I was a kid was in the library, so the research part of any project is fun for me. I think inherently I had a lot of confidence in the idea. What I needed was confidence that it was really possible to do."

* * *

The flower industry, Owades found, is a traditional and essentially unsophisticated one. While over the past decade some growers have moved to become more "value added" -- preparing, for instance, small packages of flowers for supermarkets to sell -- the industry remains dominated by small family growers. Still, it has grown about 10% a year since the mid-1980s to become about a $10-billion business today. Although there had been some halfhearted attempts at selling flowers through mail order, none had taken off. The closest concept in operation was 800-Flowers, a $25-million company that offers centralized ordering but still works within the traditional system of sending out purchases from shops in the FTD network.

Even if it was possible to ship flowers (and how would you transport an armful of spring blossoms? or a potted orchid with a quarter-inch stem? or a bonsai tree?), Owades's idea still presented three clear -- although almost nightmarish in their logistics -- challenges.

First, growers would have to adapt the way they work; they'd be in the upscale-gift business, not just the agriculture business. Instead of crating 500 stems of flowers for wholesalers as they normally did, the growers would be wrapping 12 roses in lavender tissue paper, tying the bouquet with a pretty bow, and attaching a handwritten note and care instructions just so, for a single customer. Owades envisioned hooking the growers via computer to her company. But many of the growers, she'd soon find out, didn't even have fax machines.

Second, she'd need to get an overnight shipper that was used to moving lots of flat envelopes to take on weirdly shaped boxes and accommodate extremely perishable products.

Third, even assuming she could set up a failproof computer system that would enable her to promise exact delivery dates, how could she change the buying habits of potential customers? Could she get them to care?

* * *

Research the needs of potential partners. To growers, Owades would promise sporadically heavy but consistent business. ("We'll get them orders the day after Valentine's Day," she says.) Owades also began to understand how the needs of the shipping industry were shifting in the wake of increased competition and fax machines. "When I was in business school I had studied the Federal Express start-up case. I knew carriers like Fed Ex were having to change their mind-set -- they had filled these planes with lovely flat envelopes and now were having to adapt to the challenges of moving boxes."

Evaluate yourself from your potential partners' perspective. Owades brought to the table knowledge of the catalog industry, access to capital (people had told her to call when she came up with her next big idea), energy, and smarts. "Gardener's Eden gave me credibility. I don't think you could attempt a project of this magnitude without that kind of credibility." But her visibility presented a problem, too. "If nobody's paying attention, you can stumble a little bit. That's one of the reasons I wanted to start big:

with so many people watching us, the risk of competition was sizable. If it was going to work, we really had to carve out a niche quickly and establish ourselves." Her early goal: $3 million to $4 million in sales by the second year.

Think about financing. Figuring she'd need an expensive computer system, a splashy catalog, an 800 phone number, and cash to carry the company through several years of anticipated losses, Owades calculated she'd require $2 million. But she felt confident that raising money would, for her, be one of the easiest steps. "The financing didn't come last, but it didn't come until after I was secure, until I had one or two growers lined up."

Consider legal protection for the idea. This was simple: Owades didn't think she could get any protection.

Write a plan. In January 1988 she bought books on business plans, looked at a couple of samples, and decided that "most of them are too long and boring." Reading that the average plan is 45 pages long, she decided to bring hers in at half that. "The process of writing uncovered the logic of the business and brought up smaller questions -- not megasubjects, like what are the risks -- but what happens when the box is delivered and no one's home? Those little operational things needed answers from me."

Start recruiting a management team. In February Owades began mentally lining up her crew. When she called Fran Wilson, a former colleague at Williams-Sonoma who is now Calyx's vice-president of operations, Owades said, "I have this idea. I'm not quite ready to tell you what it is, but do you have any interest at all in doing something entrepreneurial?" Not only was Wilson interested, but she volunteered to sign on, sight unseen, to whatever the "it" was that Owades was plotting. ("I knew I wanted to be in a start-up," says Wilson, "and I knew I wanted a woman mentor.") Owades definitely wanted several experienced people on board from the start. "The hardest part of being an entrepreneur is that loneliness, feeling as if no one is holding a net underneath you. I was very conscious of not wanting to start this by myself the way I did with Gardener's Eden."

Find advisers to poke holes in the concept. After her husband, the first person who heard about Owades's idea was Barry Traub, a lawyer and businessman. Another informal adviser was Stanford Business School lecturer Irv Grousbeck, a cofounder of Continental Cablevision, whom she'd met when he was teaching a case study about the start-up of Gardener's Eden.

With them, Owades would speculate about why the company might *not* work. "It's such an advantage if you can get people to tell you where the problems might be. Being surprised is the worst thing for an entrepreneur."

Decide which kind of partner to talk to first. Owades now felt she'd zeroed in on her concept and was ready to begin considering potential partners. "I approached growers first, before shippers and financiers," she says. "I felt I needed to know there was at least one grower who was willing to do this."

Check out particular partner prospects. "I went down to the flower market and asked for references and found out who the important growers of specific flowers were. I was reading trade journals, too, and certain names started coming up more frequently," she says. Owades cold-called people to talk not about going into business together but about the industry, how they sold flowers now, and the feasibility of mail-order flowers.

Determine the criteria for a partner. "It wasn't just finding someone willing to work with me. The growers had to meet certain criteria: quality, specialization in a particular flower variety, and commitment to service. And *then* it was, who will work with me?"

Spill the beans to a potential partner. Owades actually had one advantage: several years before, she had dealt with one grower who had supplied flowers briefly to Gardener's Eden. She talked to the grower, Peter Barr, on the phone about her idea, then drove out to Watsonville, Calif., to meet with him at his business, Sunbay Growers. After reading her business plan, he was intrigued enough to do some testing with her.

* * *

"We have an industry that's oversupplied with flowers," says Barr, "and I'm always looking for different ways to sell them." In February 1988 Owades and Barr dived into figuring out how to preserve flowers during shipping. They experimented with different sizes of boxes, various ways of securing the flowers, and an assortment of padding. They did test shipments to a dozen sites (family and friends) across the country. Barr wasn't charging for his time, although Owades was picking up the cost of materials. After a couple of weeks the basic concept of shipping bundles of flowers seemed feasible.

"My reaction to the idea, candidly, was that I was glad it was her money," says Barr. "The mailing lists, the computer systems -- I knew catalogs were expensive, but the size of the venture just to start and the amount of money she had to raise made it risky. I agreed with the concept from the beginning, but I was more leery when I saw the numbers she had to generate." Still, Barr agreed to be a partner if the company took shape.

With one grower in her pocket, Owades was ready for the next step: finding a shipper to work with her.

* * *

Evaluate other potential partners. "Instinctively, because of the reputation and stature it would give our business, I felt my shipper had to be Federal Express," says Owades, who had researched carriers the way she had investigated growers -- by reading articles at the library and annual reports. With help from Fran Wilson, who had begun working informally on the venture, Owades went through the motions of talking to other candidates. "Airborne, Emery, and a variety of others at the time were very eager to have the business and were very competitive on price but could not promise the lift capacity, the airplane space out of specific locations -- growers often are located out in farm country -- and a guarantee on a day-in, day-out basis to move product. We were guessing that some growers might eventually need to ship 5,000 boxes on a given day, and the other carriers just couldn't commit to it.

"Thinking about Federal Express was tough because it's so big," she continues. "Who was I? I was nothing. I didn't have a business, I had an idea." (She didn't even have a name: the company wouldn't be dubbed Calyx & Corolla until right before the catalogs were printed.) And she was asking for more than just an account number: she needed her partner to offer competitive prices, install a computerized package-tracking system at her office, and agree to such things as leaving flowers at a customer's door without a signature.

Figure out whom to contact first at potential partners. In approaching Federal Express, there was an obvious place for Owades to start: the company has district managers who handle different areas of the country; their job is to get new accounts and service them. That's where Owades began in February 1988.

Wend your way through the corporate structure. "Lynn Anderson, the district manager, was saying, 'Your idea is impossible -- but wait. Maybe if you call so-and-so in Memphis [the site of Fed Ex headquarters] . . . ' " explains Owades. "I'd call Memphis and ask people what their roles were, could they help me. I was respectful of busy people's time, so before the call, I made sure I could articulately say what the concept was and what I wanted from them. I'd write it out on paper.

"Every person I talked to gave me a little information. I'd ask, What are Fed Ex's goals with the catalog industry? Is the company currently in flowers? You don't always get answers, but you might. Very often it took half a dozen calls to get through to these people. I never expected them to call me back; they didn't know me."

* * *

"At the center of Ruth's effectiveness," says Stanford lecturer Grousbeck, "is that she can sit down across the table and get you to do almost anything."

Owades's persuasiveness served her well in plowing through the Federal Express maze. She was referred to a consultant named Jay Walker, who was searching out catalog business for Federal Express. He hooked her up with Fed Ex marketing chief Richard Metzler and with Mike Glenn, now senior vice-president of catalog services. "It helped that she'd done a lot of homework," says Glenn. "Plus, we had just begun an initiative to get more involved in catalogs." Nevertheless, between February and April of 1988 there were infinite phone conversations, faxes, and letters. Finally there came a definitive conference call involving Owades, the bigwigs in Memphis, and the local Fed Ex rep. Setting aside details of pricing, systems, and timing, Federal Express confirmed that it was on board to help make Owades's idea work.

* * *

Negotiate. The Federal Express negotiations were done without in-person visits. Owades agreed to take on legal liability for packages left without signatures, negotiated a volume-pricing schedule, and determined what size her company would need to reach within a year to keep everybody happy. Similar negotiations had to be made with the growers, who were being asked to prepare for unknown volumes of orders. "I can't say strongly enough that we were all figuring it out together," says Owades. "This wasn't something I rammed down their throats. I didn't know what the minimums would be, and neither did they. Everybody just knew that by the time the year ended, if we didn't reach certain volumes, no one would be very happy, most of all, us. It was a real experiment."

Impress potential investors. Owades put $150,000 of her own money into the company to show her commitment, and took a reduced salary. In addition, she went out on a limb: she sent potential investors flowers in boxes via Federal Express, the way they'd receive them if Calyx existed. It was a risk: if the flowers didn't arrive in good shape, she'd have blown her chances. The first business plans were sent out in May, and by June, 18 people had committed to the full $2 million Owades was seeking.

Train your partners' employees. "I took a sample box on a tour to the growers and showed them what to do and how to do it," says Owades. "Most were pretty small entities, with two or three people who'd be handling our business."

Solicit suggestions, especially from your partners in their areas of expertise. "From the very beginning I really enlisted the help of the growers. It seemed like the obvious thing to do, but it's also a good strategy because then people were invested in making things happen. I don't know that I thought about it that way, though; I just wasn't the expert. We solicited opinions from growers, Federal Express's packaging lab, and the box manufacturers, and we synthesized them."

* * *

Summer ticked along. Owades continued working out details with Federal Express and lining up growers. Fran Wilson officially came on board in July. Working out of the same one-room office, the two women bought a computer, had software designed, got mailing lists, and negotiated for a larger space. They nailed down pricing with growers, agreeing to wholesale plus a surcharge to cover additional personnel costs.

Now the business would depend on how successfully Owades met her third big challenge: getting potential customers to care. She hadn't done any market research on the idea; she admits she was betting $2 million of capital on little more than a gut instinct that customers would like the catalog and buy into the concept.

The biggest question, she thought, was not whether the price points were OK -- her experience in the high-end catalog industry made her confident that bouquets in the $30-to-$70 range were reasonable -- but more whether customers actually would understand *what the catalog was offering, why it was different, and why she thought it was better. Calyx would have to change fundamental customer buying habits.*

The catalog would be key to Calyx's initial credibility; it had to look, Owades felt, as if it had been around forever. There would be no promotion or advertising to support it. With everything gambled on the mailing's ability to do the selling, the first Calyx & Corolla catalog went out in January 1989.

* * *

Expect -- and deal with -- problems. Customers did, in fact, slowly buy the idea. The phones started ringing the first day the catalogs reached customers, and by Valentine's Day the company had logged 5,000 orders. But in those same first months things also went wrong. "There was no question that the growers were on board with what to do to get those flowers there safely, but the fussy part of how the boxes looked was harder," says Owades. There were little glitches, like the time Calyx ran a photo of how a bouquet would look, without confirming it with a grower, and the grower wasn't able to supply the greenery depicted.

Meanwhile, with Federal Express, Owades was learning that "when you're dealing with a $7.5-billion corporation, agreeing on something at the top management level is one thing, but for them to communicate that down to every courier on every route is another. We were the only company for which they had agreed to an automatic leave-it-at-the-door, and that's great in theory, but they really have to *leave it at the door.*" (Federal Express helped by publicizing the Calyx story in its in-house magazine and in-house television program.)

Sever ties with a partner if you have to. Calyx dropped one grower from its brood of six in those first months because of inconsistent quality. "It was horrible, like having a problem in the guts of your own business. I knew we had to cut our losses quickly. We sent letters to everyone who had received flowers from this grower -- even though some of the packages were fine -- saying we were so sorry, we didn't realize what was going on, here's a gift certificate. We sent those to several hundred people, which at the time seemed huge."

Recognize that some things are hard to control. Calyx and its partners all share responsibility, but each displays a degree of territoriality. Says Abe Wynperle, the president of Miami-based Sunpetals, one of the largest flower growers in the world: "Ruth created the relationship with Fed Ex, but when it comes to managing the logistics on a daily basis, she does not get involved. All Ruth wants to know is that the package got there eventually; how it gets there is my problem and Fed Ex's problem." Of course, how it gets there *is* Owades's problem as well -- even if she isn't directly involved in solving it.

Moreover, natural disasters are impossible to control, and they abounded for Calyx & Corolla. On Valentine's Day during its first year, a freak snowstorm cloaked Memphis, the hub for Fed Ex flights, threatening delivery, and Calyx had to call many customers and tell them their flowers would be late. In October 1989 the San Francisco earthquake shut down Calyx's high-rise office for five and a half days, destroyed a warehouse, and badly hurt some primary growers. And a freak cold spell in California in December froze many stems. "I remember writing to my investors at the end of the year and trying to finish on an upbeat note," says Owades. "All I could think of was that the table of probability showed that Mother Nature does not strike three times a year two years in a row."

Do ongoing training. Federal Express flies a team from Memphis to Calyx's headquarters to train new Calyx employees before a busy season. (Telephone staffers get two weeks of training.) Calyx employees regularly visit growers to offer help. Wilson says Calyx and its growers are setting up a more formal quality-assurance program for the people picking and packing the flowers, one that may include bonuses and incentives.

Push interaction with partners down to many staff levels. Owades, Wilson, and Ann Hayes Lee, who came on as Calyx's vice-president of marketing in June 1989, aren't the only ones who nurture the alliances: for instance, Laura Goodman, the company's operations manager, spends about a day a week visiting growers. "Spreading the interaction with partners through a company is very important," says Owades. "At our company it's very, *very* important. The chain gets solidified at so many other places."

Make sure everyone gets credit. Owades has received repeated coverage in everything from the flower trade publications to the *New York Times.* In all her interviews she talks about Federal Express and the growers and how much they are all partners. Says flower grower Peter Barr: "Ruth is working to promote flowers, and we appreciate that. As a result, she has the top priority for getting our flowers if we're running short."

Make sure the CEO has time to maintain the relationships. Taking care of her alliances is probably Owades's primary task as chief executive. "I do some of the finance things, like communications with the investors and establishing the banking relationship. But I consider those relationships my job." She talks to each of her growers at least weekly and with both the regional Fed Ex manager and her Memphis contact monthly or so, at minimum. Owades keeps in touch with them by phone, fax, and, less frequently now, visits.

* * *

In the time since the business and the relationships on which it's based took their first steps forward, Calyx & Corolla has grown steadily. In 1989 it consisted of a core of 8 staff people, supplemented by part-timers who helped answer the phones during the busy seasons.

Today 25 people work for the company full-time, and up to 100 are added during the business's peaks. A bank of operators occupies an airy room downstairs from the main office space overlooking San Francisco. On one wall is a chalkboard listing the day's flower specials. Samples of all the vases and Calyx's dried-flower products ring the ceiling.

Twenty-five growers now work as Calyx's partners. Federal Express uses 18-wheel trailers to service the business, loading the brown flower boxes bearing Calyx logos and Fed Ex shipping labels via conveyer belt directly into waiting airplanes. On the busiest days some growers fill half a dozen trucks -- booked in advance -- with packages.

Calyx has had competitors: they've come and gone. One project, funded by a venture-capital group, lasted about a year. When the business shut down, Calyx bought its mailing list. Harry & David, a fruit-and-gift-catalog company, came out with a flower catalog in 1991, then left the market. A lot of mail-order catalogs, say Owades, dabble in one or two flower items, "but when flowers get attention, I think that just makes us look more the expert."

Because of its alliances, Calyx & Corolla has moved past the start-up stage sooner than most new companies do. In 1992 the company exceeded its goal of breaking even, posting profits greater than 5% on sales of $10 million. The average order in 1992 was $65.

In the summer of 1990 Owades raised another $1 million from her original investors. She is debating whether to take the company public or seek additional private financing or other relationships to obtain the cash to keep Calyx growing. While acknowledging that it remains a challenge to get potential new customers to catch on to the idea, Owades is still confident, she says, that Calyx & Corolla can eventually be a $100-million business. Her partners, so far, concur.

REMAKING THE CUT FLOWERS BUSINESS

Flowers are normally a week old or more when bought, whether purchased at a store or ordered by phone (in which case retailers are directed to make deliveries from their stock). Calyx & Corolla cut out three middlemen and, with the help of Federal Express, connected growers directly with customers. Customers call Calyx headquarters and order from a picture in the calyx catalog; Calyx transmits the order to growers by computer link, and customers receive flowers that are up to nine days fresher.

THE TWENTY-EIGHT STEPS

Here is the process by which Ruth Owades conceived the idea for Calyx & Corolla and developed the strategic alliances that enable it to exist

1. Contemplate alone
2. Brainstorm with others
3. Research the idea and the industry
4. Research the needs of potential partners
5. Evaluate yourself from your potential partners' perspective
6. Think about financing
7. Consider legal protection for the idea
8. Write a plan
9. Start recruiting a management team
10. Find advisers to poke holes in the concept
11. Decide which kind of partner to talk to first
12. Check out particular partner prospects
13. Determine the criteria for a partner
14. Spill the beans to a potential partner
15. Evaluate other potential partners
16. Figure out whom to contact first at potential partners
17. Wend your way through the corporate structure
18. Negotiate
19. Impress potential investors
20. Train your partners' employees
21. Solicit suggestions, especially from your partners in their areas of expertise

22. Expect -- and deal with -- problems
23. Sever ties with a partner if you have to
24. Recognize that some things are hard to control
25. Do ongoing training
26. Push interaction with partners down to many staff levels
27. Make sure everyone gets credit
28. Make sure the CEO has time to maintain the relationships

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The Great Game of Business

Author: Stack, Jack
Issue: June, 1992, page 052

Book excerpt about SRC's philosophy of open-book management and employee empowerment.

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Or, How I Learned to Stop Worrying and Teach People How to Make Money

* * *

It's amazing what you can come up with when you have no money, zero outside resources, and 119 people all depending on *you* for their jobs, their homes, and their prospects of dinner for the foreseeable future.

That's pretty much the situation my 12 fellow managers and I faced in February 1983, our first month in business as an independent company. We were supervisors and managers at a little factory in Springfield, Mo., that up until then had been owned by International Harvester. At the time Harvester was in big trouble, cutting loose operations like ours in a desperate attempt to stay afloat. When the company offered to sell us the factory, we jumped at the chance to save our jobs. Our new company was loaded down with so much debt that we couldn't rely on traditional ways of managing, because they wouldn't produce the kind of results we needed in time to save us. So we grabbed for something new, based on what we thought of as the higher laws of business.

The first higher law is: *You get what you give.*

Here's the second: *It's easy to stop one guy, but it's pretty hard to stop 119.*

These laws of business are the reason we survived and have been successful ever since. It was out of these laws that we created the Great Game of Business.

The Great Game of Business is a whole different way of running a company and of thinking about how a company should be run. What lies at the heart of the Game is a very simple proposition -- that the best, most efficient, most profitable way to operate a business is to give everybody in the company a voice in saying how the company is run and a stake in the financial outcome, good or bad. We turn business into a game that everybody in the company can play. It's a way of tapping into the universal desire to win, of making that desire a powerful competitive force. Wining the Great Game of Business has the greatest reward: continual improvement of your life and your livelihood. You get that reward, however, only by playing together as a team and by building a dynamic company.

That's what we did at the Springfield Remanufacturing Corp., and it worked for us in a big way. From 1983 to 1986 our sales grew by more than 30% per year, while we went from a loss of $60,488 in our first year to pretax earnings of $2.7 million (7% of sales) in our fourth. We never laid off a single person, not even when we lost a contract representing 40% of our business for a whole year. By 1991 we had annual sales of almost $70 million, and our work force had increased to about 650 people from the original 119. But perhaps the most impressive number concerned the value of SRC stock, worth 10¢ a share at the time of the buyout. By the end of January 1991 that 10¢ share had soared in value to $18.30, an increase of 18,200% in eight years. As a result, hourly workers who had been with SRC from the beginning had holdings in the employee stock ownership plan worth as much as $35,000 per person -- almost the price of a home in Springfield.

We didn't do this by riding some hot technology or glamorous industry. Remanufacturing is a tough, loud, dirty business, where people work with plugs in their ears and leave the factory every day covered in grease. SRC remanufactures engines and engine components. We take worn-out engines from cars, bulldozers, and 18-wheelers, and we rebuild them from the ground up, saving the parts that are in good shape, fixing those that are damaged, replacing the ones beyond repair. But our real business is education. We teach people about business. We give them the knowledge that allows them to go out and play the Game.

* * *

The Rules of the Game

People who run companies know there are really only two critical factors in business. One is to make money, and the other is to generate cash. As long as you do those two things, your company is going to be OK, even if you make mistakes along the way. I'm not saying safety is not a major issue, or quality is not a major issue, or delivery and customer service are not major issues. They are all major issues, but they are part of the process. They are not end results or even conditions of survival. In business you can have great customer service and fail. You can have a terrific safety record and fail. You can have the best quality in your industry and fail. The only way to be secure is to make money and generate cash. Everything else is a means to that end.

Those simple rules apply to every business. And yet at most companies people are never told that the survival of the company depends on doing those two things. No one ever explains how one person's actions affect another's, how each department depends on the others, what impact they all have on the company as a whole. Most important, no one tells people how to make money and generate cash. Nine times out of 10, they don't even know the difference between the two.

At SRC we teach everybody those rules, and then we build on that simple knowledge and take people all the way to the complexity of ownership. We try to take ignorance out of the workplace and force people to get involved, not with threats and intimidation but with education. In the process we are trying to close one of the biggest gaps in American business -- the gap between workers and managers. To do that, you have to knock down the barriers that separate people, that keep people from coming together as a team.

The biggest barrier is a basic ignorance about business. Most people who work in companies don't understand business. They think *profit* is a dirty word. They think owners slip it into their bank accounts at night. They have no idea that more than 40% of business profits goes to taxes. They've never heard of retained earnings. They can't conceive how a company might be earning a profit and yet have no cash to pay its bills, or how it might be generating cash and yet operate at a loss.

That's the ignorance you have to eliminate if you want to get people working together as a team. But eliminating it is tough because most people find business incredibly boring. They really can't get too excited about making money for somebody else. Everything they've ever heard about business makes it seem complicated, confusing, hard to understand, abstract, maybe even a little seamy.

That's where the Game comes in. We tell people they have the wrong idea about business, that it's really a kind of game -- no more complicated than baseball, golf, or bowling. The main difference is that the stakes are higher. How you play softball may determine whether or not you get a trophy, but how you play the business game has a big impact on whether or not you can support your family, put food on your table, fulfill your dreams. All you need is a willingness to learn the rules, master the fundamentals, and play together as a team.

Everything we do at SRC is geared toward getting people involved in playing the Great Game of Business. We teach people the rules. We show them how to keep score and follow the action, and then we flood them with the information they need to do both. We also give them a big stake in the outcome -- in the form of equity, profits, and opportunities to move ahead as far as they want to go. We do all this, moreover, by using tools of business that have been around for a hundred years or more. The most important of those tools are the financial statements.

* * *

The Basic Tools of the Game

When people come to work at SRC, we tell them 70% of the job is disassembly -- or whatever -- and 30% of the job is learning. What they learn is how to make money, how to make a profit. We offer them sessions with the accounting staff, tutoring with supervisors and foremen, instructional sheets, and so on. We teach them about aftertax profits, retained earnings, equity, cash flow, everything. We want each of them to be able to read an income statement and a balance sheet.

Then we provide a lot of reinforcement. Once a week, for example, supervisors hold meetings throughout the company to go over the updated financial statements. Those numbers show how we're doing in relation to our annual goals and whether or not there will be quarterly bonuses. The more people understand, the more they want to know.

Suddenly, business makes sense to everybody. But to understand it, you have to look at the totality. You can't focus your attention on one job, one department, or one function. The Game takes down walls. It forces people to realize that they're on the same team, and they win or lose together. You know you're going to get rewarded, but so will everyone else. When you look at goals like profit and cash flow, that makes people understand how they all depend on one another.

* * *

Why We Play the Game

There are four basic reasons we play the game:

1. We want to live up to our end of the employment bargain. You take on a big obligation when you hire somebody. That person is bringing home money, putting food on the table, taking care of children. Of course, the individual has obligations to the company as well. But as much as possible I want it to be someone's choice whether he or she leaves the company. It bothers me to see people laid off through no fault of their own. Everything we do is based on a common understanding that job security is paramount -- that we are creating a place for people to work not just this year or 5 years from now, but for the next 50 years and beyond. We owe it to one another to keep the company alive.

One of the lessons we learned from the demise of International Harvester was that there is no security in ignorance. The only way to know if your job is safe is by looking at the financial statements. We had never dreamed our jobs at Harvester might be in danger. This was a company that went back 100 years, one of the 30 largest in the country. My dad had retired from it. I'd worked there for 14 years. I just *assumed* my job was secure, and I had no way of knowing it wasn't. Then Harvester went down the tubes.

We had no such illusions when we started SRC: we knew our jobs were in jeopardy from the start. To buy the plant, we'd had to come up with $9 million, of which we were able to scrape together $100,000 from mothers, fathers, in-laws, uncles, friends, and our own personal savings. We borrowed the rest. We had an 89-to-one debt-to-equity ratio. We couldn't afford to make a $10,000 mistake.

We realized there were two things we couldn't do. Number one, we couldn't run out of cash, because our creditors would close us down. Number two, we couldn't destroy from within, which would be a danger if morale got bad. If either happened, we'd lose the company and all 119 of us would lose our jobs. The more we thought about it, the more convinced we became that the best way to avoid both dangers was to communicate with people through the financial statements. Everybody had to know the company's situation at every point. We had to tell people where the cash was and make sure they were involved in deciding what to do with it. That's how the Game evolved.

We developed a system that delegates responsibility for job security by giving people a scorecard and a way to influence the score. The Game lets you see for yourself how safe your job is and shows what you can do to make it safer.

2. We want to do away with jobs. Most companies tell employees: "Drill as many of these holes as possible, as fast as possible, and don't think about anything else." If you do that, you wind up with workers who think a job is just a job. I call them the living dead. You can't have high productivity with faceless people. They're not happy with themselves; they're not happy with their jobs; they bring you down. But you can't really blame them for feeling that way about their work when they're constantly being told to just do the job, nothing more. Why would anybody think a job was more than a job when that's all the company expects it to be? But if you set up the work to be a step on the path to something else, then it takes on a new meaning.

We try to show people they don't have to limit themselves and they do have choices. We try to eliminate the sense of being trapped -- the sense that I-can't-go-anywhere-this-job-is-a-dead-end-it's-boring-my-whole-life-is-the-pits. We continually challenge people to tell us where they want to go, what they want to do with their lives. When you do that, you open a lot of doors. You get rid of a lot of the frustrations people have. You also take their excuses away, which is essential.

To be sure, some jobs are bad, demeaning -- the kind of jobs nobody wants to do. We said, "Let's robotize the jobs people don't want; let's computerize them; let's get them out of the market." But once you've gotten rid of the worst jobs, then what? There are still a lot of jobs that involve putting washers on bolts. You can't walk away from it. The work is boring, but it has to be done.

The Game is an attempt to create an environment wherein all employees can take pleasure in their work, even the people who put washers on bolts. We try to take people beyond the job, to give them the opportunity to use their intelligence and achieve something. In effect, you steal a little bit of someone's brain while she's applying the manual effort. She may be putting washers on bolts, but at the same time she's thinking about ways of making her environment better, her position better, her life better. She's not just making a contribution to an end product. She's making a contribution to her own life. She's moving in a positive direction.

3. We want to get rid of the employee mentality. The big payoff to us for playing the Game is that we become a more educated, more flexible organization. We can respond instantaneously to changes in the market. We can respond to problems in the length of time it takes to place a phone call.

We can do all that because we have a company filled with people who not only *are* owners, but *think* and *act* like owners rather than employees. That's an important distinction. Getting people to think and act like owners goes far beyond giving them equity. Many companies set up ESOPs, expecting a miraculous change of attitude in the work force. Then they're shocked to find that people still think and act like employees: they won't take initiative or responsibility; they make excuses and blame other people for their own failures.

That's the antithesis of ownership. Owners, *real* owners, don't have to be told what to do -- they can figure it out for themselves. They have all the knowledge, understanding, and information they need to make a decision, and the motivation and the will to act fast. Ownership is not a set of legal rights. It's a state of mind. You can't give people that state of mind in one fell swoop. You can only nurture it through education.

The whole idea behind the Game is to create an environment in which people are learning all the time. They're seeing all kinds of situations. We're showing them both sides of every story, allowing them to make decisions, to fail with the incorrect decisions they make, and to learn from their failures and try again. The numbers are an important part of that. They serve as the bond, the basis of trust. By giving people the numbers, I can say to them, "If you don't believe me, look it up. It's all there in the numbers." The nice part is that as you learn, you grow, you get more out of life, you have fun.

4. We want to create and distribute wealth. If we can improve productivity, we can create a society that's continually getting better, a society in which people do more to help one another. As it is, we're becoming a society of haves and have-nots. What's happening is that the rich know how to play the Game, and they're playing it well. Meanwhile, the society as a whole has a declining standard of living. That standard will continue to decline unless we can figure out how to be more productive. Part of the problem is that you can't increase the standard of living without generating wealth, and we hate everybody who generates wealth -- whether it's the oil companies or the doctors or the entrepreneurs. That's a big mistake. It isn't the *generation* of wealth that we should hate. What's wrong is the *distribution* of wealth. Our real problem is that we haven't taught people how to share in that distribution.

The only way to solve the problem in the long term is to make people conscious of generating and understanding profits, conscious of where profits come from and where they go. Somebody's got to teach people about wealth -- about retained earnings, equity, what an earnings multiple is and how it can affect them individually. If we don't do it, we'll remain in this ignorant, dormant stage where we continually think a job is a job is a job. And the decline will continue.

You have to begin by getting people away from focusing on the specific mechanical things they do, because there's more to business than that. Business is dealing with some of our most pressing social issues these days, like health care. This is the first time I can remember when people on the floor, even those at the job-entry level, are paying attention to fringe benefits. Health insurance has always been taken for granted. Now it's moved to center stage. It's an overhead item, a hidden cost, a cost people don't necessarily see. It's important for people to pay attention to the cost. But how do you take them from focusing on washers and bolts to focusing on health care if you haven't devised some system for explaining it to them?

The Game is one way to do that. We're teaching people how to take care of themselves. In the process, we're redistributing wealth -- we're redistributing the earnings of the company back to the people who created them.

HOW TO BE AN OPEN-BOOK MANAGER

When you use financial statements as management tools, you have to adapt them to your purposes. Don't rely on the kind of financial statements provided by certified public accountants. Those statements are designed to give outsiders the information they want about a company. Employees need something a little different. The general form is the same, and the standards of accuracy should be just as high, but the detail has to be broken out in a way that sheds more light on *what's happening inside the company*. The point is to show each person how he or she affects the income statement and the balance sheet. You want to report the numbers accordingly, emphasizing the ones over which people have control.

How you do that depends entirely on your business, but here are some general rules to follow:

1. Start with the income statement. It is the best tool you have for drawing people into the action of the Game, because it is constantly changing. As a result, it lends itself to demonstrating cause and effect. You can use it both to monitor the action as it unfolds and to show people their role in determining whether or not the company makes money.

2. Highlight the categories in which you spend the most money. Those are obviously the ones that are going to have the biggest impact on your company's profitability, so you want to monitor them very closely.

3. Break down categories into controllable elements. If labor is a variable expense, you want people to see it vary. If you use trucks in your business, people should know how much you're spending there. In a sales organization, you'd keep a close eye on travel, entertainment, and other selling expenses; in a professional-service firm, you'd probably want to break down billable hours. The whole idea is to set up the income statement in a way that lets people observe the effects of what they do.

4. Use the income statement to educate people about the balance sheet. While the action may center on the income statement, the balance sheet tells you the real score -- how secure your jobs are, how much wealth you have created, where you are vulnerable. Once people get the hang of the income statement, it's a fairly simple matter to show them how the changes there produce changes in the balance sheet. Use the same principle of breaking down large balance-sheet categories to illuminate cause and effect.

At SRC, on our financial statements we break out the various costs involved in the manufacturing operation. Typically, those costs would be lumped together in the cost-of-goods-sold line on the income statement. That may be adequate for a banker, but it doesn't tell us very much about what's really going on in production, where most of our people work. We want them to see exactly what effect they are having on profits, so we break down the cost of goods sold into its basic elements -- material, labor, and overhead. Every week the various departments forecast whether, and by how much, they are going to be over or under budget for the month. Then, after the month's close, we produce a 100-page set of financial statements showing exactly what happened where and how each person contributed.

Almost every element of the company is quantified, from the percentage of the budget spent on receptionists' notepads to the amount of overhead absorbed each hour that a person puts in grinding crankshafts. We constantly measure material costs, overhead, performance, hourly rates. Labor ratios are calculated on a daily basis -- by supervisors, group leaders, department managers, the hourly employees themselves. There are numbers for everybody. Sales numbers are posted daily: who's buying, what they're buying, how they're buying. The numbers are broken down not just by customer but by product.

We didn't create this system overnight. It took us years to develop all the mechanisms we now have for keeping people up to date on the numbers, and we're still coming up with new ones. But we started out very simply. In the first year our chief financial officer would chicken-scratch a daily report to the bank showing where our cash was, where our inventories were, where our receivables were, what we owed, and so on. That would be passed around the company. People would ask, "What do we owe today?" From there, the reporting system just grew and grew.

It expanded because people kept asking for more information. The more information we provided, the more they wanted to know. They wanted to see exactly where they fit into the process: how much money they were saving the company, how much profit they had generated on a particular job, what their ups and downs were, how well a particular idea had worked. Their questions told us what information we should be reporting. Management's role was to instill the desire to know. We did that by a variety of methods -- through the bonus system, the weekly meetings, and all the other games we developed along the way. But the process got started as simply as can be: by sitting down and explaining to people how the bank was measuring us and how we were doing.

IT'S GOT TO BE A GAME

You can go too far trying to light the fire in people's eyes. If you do, you'll find people stop having fun and start getting scared. Then you have to pull back fast.

That happened to me at one point. I decided that each of the managers should have a list of 10 accountabilities he'd be expected to meet in the course of the year. I made them so specific that they overlapped and conflicted. People had to step on one another's toes to win. It might have worked out if each manager had done 80% of what I asked for. But I had two guys who strove to be the best in every category, and so they walked straight into each other's territory. They almost killed each other.

The mistake I'd made was to think people would look at those accountabilities as guidelines, as opportunities to help the company and help themselves at the same time. But people see an implicit threat in a list of individual performance criteria. The message is, "OK, management is telling me what I have to do if I want to keep my job."

So these two guys got into a confrontation. One of them walked up to the other and said, "Hey, you may be meeting your goal, but I ain't making mine. If I screw up, my family could be in jeopardy. I could lose my job." I heard them arguing. They took the accountabilities not as ideals to strive for but as minimum standards of performance. So I took the accountability sheets, went out in the backyard, put them in a metal wastepaper basket, and set them on fire.

I hadn't realized the fear I was building into the system. I learned two important lessons from that experience:

* **Give everyone the same set of goals.** Let all employees have the same objectives, and make sure they have to work together to achieve them. Turn success into a group effort. That way they can win together.

* **Don't use goals to tell people everything you want them to do.** Too many goals are useless. You should have only two or, at most, three goals over the course of a year. What's important is to make sure each goal encompasses five or six things. In other words, choose a goal that people can meet only if they do five or six things right.

HOW BONUSES CAN MAKE YOU AN ETERNAL BOOTSTRAPPER

I am a strong believer in operating a company, any company, as if something could happen at any moment to threaten its survival. Most companies follow that principle when they are starting up. They know they could run out of cash next week, so they become extremely resourceful. It's known as bootstrapping, and it's how all businesses should be run, not just start-ups. Bootstrapping is a mentality, a way of operating on self-reliance, ingenuity, intelligence, and hard work. A good bonus system can help you build a bootstrapping mentality by putting a great deal of emphasis on job security -- by reminding people what it takes to protect their jobs and by showing them how they can get more out of those jobs.

The truth is, there is only one sure way to protect jobs, and that is to be ruthless about costs. A bonus system like ours allows us to hold base salaries at a level that gives people a great deal of job security but shares with them, through bonuses, whatever additional money they generate. The more they generate, the bigger the bonuses. Here's our process for choosing and checking our bonus numbers:

Set profit targets and maximum bonus payouts. First, we decide on the baseline for profits, the top target for profits, and the highest level of bonuses we will pay on both income-statement and balance-sheet goals. From that, we can figure out how much additional profit people might generate and how much the company will give back to them as bonuses if they hit all their targets.

In our case, pretax profits have to be greater than 5% of revenues before we pay any bonus on the income-statement goal. Above 5%, we start sharing the additional profits with people, as bonuses based on a percentage of their regular compensation. For simplicity's sake, we'll assume that everyone receives the same percentage and that the most people can earn is an extra 13% of their annual pay, which they get if we hit the maximum level on both goals -- 6.5% for hitting one, 6.5% for hitting the other. Let's say we have sales of $70 million per year, and our payroll is $10 million. The most we'd pay out would be an additional $1.3 million in one year (.13 x $10 million). We'd only pay that much, however, if we hit the maximum payout level on both goals, including the income-statement, or profitability, goal, which we usually set at 8.6%. For this example, let's call it 9%. That means the company would earn an additional pretax profit of $2.8 million (9% - 5% = 4%; .04 x $70 million = $2.8 million). So after we've paid the bonuses, we'll still have $1.5 million left for other purposes.

Notice we're assuming that we'll pay the maximum bonus on *both* goals, not just the profitability goal. A balance-sheet goal may not have any effect on your profits, but you'll have to pay the bonus on it if people hit it, so you must include it in your calculations.

Decide on a balance-sheet goal. Meanwhile, we are choosing our balance-sheet goal with an eye toward making sure we'll have the cash to pay the bonuses people earn. You run a big risk if you have an income-statement goal but not a balance-sheet goal: people may wind up making money without generating cash. Theoretically, all the money they make could go into inventory and receivables, and you wouldn't be able to pay the bonuses on time. That's one reason we like liquidity as a balance-sheet goal. It greatly increases the odds that we will have the cash we need to pay bonuses and do a lot of other things.

Set the targets on the balance-sheet goal. First, we look at what would happen to the balance sheet if we hit the maximum target on the income statement. Then we start kicking numbers around on the balance-sheet goal to come up with a top target that will make those extra profits available for our use.

Let's say our balance-sheet goal is liquidity, as measured by the current ratio, and we have $10 million in current assets and $5 million in current liabilities. So our current ratio is 2 to 1, or 2.00. We already know that if people hit the top target on the income-statement goal, they will generate an additional $2.8 million in pretax profits. If they also hit the top balance-sheet target, we will pay $1.3 million in bonuses, which leaves us with an additional pretax profit of $1.5 million. About 40% of that goes to taxes, so we would have additional aftertax profits of $900,000 (.60 x $1.5 million = $900,000).

We'd like to have all of that as cash. Let's say we use the $900,000 to reduce our current liabilities from $5 million to $4.1 million, while our current assets stay at $10 million. Now our current ratio is 2.44 ($10 million/$4.1 million = 2.44). We started out at 2.00. So if we keep all the additional aftertax profit as cash, we'd have about a 22% increase in the current ratio. That's the maximum increase in liquidity we can expect if we hit a pretax margin of 9% and pay out the full bonus, 13% of payroll. It means we've taken all the money left over after paying bonuses and taxes and used it to reduce our current liabilities. We haven't tied any of the extra cash up in illiquid assets.

Once we've done those calculations, we can set the targets on the balance-sheet goal. We put the biggest bounty, the 6.5% bonus, on that 22% increase in the current ratio, and we work backward from there. Since we want several payout levels, we decide to pay a bonus for every 5% improvement in the ratio. You might note that this gives people a strong incentive to reduce current liabilities rather than put the cash into current assets. If you increase current assets by $900,000 and leave current liabilities at $5 million, you wind up with a current ratio of 2.18 ($10.9 million/$5 million = 2.18). That brings you only up into the first level of the bonus payout.

Protect your equity. We never want people to forget the real payoff for playing the Great Game of Business at SRC, namely, the generation of wealth in the form of equity. So we always go back to see what effect our goals are likely to have on the value of our stock.

If the company has a 9% pretax margin on $70 million in sales, it earns $6.3 million in pretax profits (.09 x $70 million = $6.3 million). Out of that $6.3 million, we pay $1.3 million in bonuses, which leaves us with $5 million pretax. We can use part of that money to build up the ESOP. So we reduce our earnings further by putting $1 million into the ESOP. That brings our pretax profits down to $4 million. We get to keep only about 60% of that amount, since 40% goes to taxes. So our aftertax profit comes to about $2.4 million (.60 x $4 million = $2.4 million). That's our retained earnings for the year, the money we have available to finance our growth, or pay down our long-term debt, or otherwise invest in ourselves. Let's say the company is worth about 10 times its annual aftertax earnings, which is the common rule of thumb. In that case, SRC's value would be about $24 million.

It's all very simple math. The bonus program generated $2.8 million in additional pretax profits. We gave out $1.3 million of that as bonuses. We put another $1 million into the ESOP. We paid taxes on the remaining $500,000 and had an additional $300,000 in aftertax earnings. That translates into a $3-million boost in SRC's value.

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Recommended Readings: Anatomy of a Start-Up

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WHARTON REPROGRAPHICS

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David Dodson (A)

David Dodson walked back to his office, the frustration building inside him. David was president of Atlas Security Co., a residential and commercial alarm company. It was January 1992 and he had just spent a few minutes talking with Ed Latham and Gill Brown, who were managing the company's commercial and residential operations departments, respectively. These departments were responsible for installing alarm systems for new customers and servicing existing accounts. David explained the source of his frustration:

> I stepped in to manage the departments myself about four months ago, in order to deal with some of the problems in this area. We have made a lot of progress, but every time we get one problem solved, a new one pops up. This morning, for instance, I was talking with Ed and I learned that we are barely inspecting any installation jobs at all. This is contrary to a policy I put in place last month that requires 100% of jobs to be inspected. Concerned about this lapse, I investigated the warehouse to see if all the jobs were being staged [prepared] correctly the night before. I was disappointed to discover that, like the inspections, this was not being done as I had requested.
>
> We have other problems as well. Morale is low because everyone feels that our service has deteriorated over the last year. The volume of customer complaints is up considerably over the same time 12 months ago. Basically, this operation is not in good shape. I need to get things on track so that I can spend more time trying to make some acquisitions and grow this business.

Background

David Dodson graduated from Stanford Business School in 1987. Anxious to get into business for himself (and to pursue that interest) he took a job as a casewriter for the "Starting

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Professor Michael J. Roberts prepared this case as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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New Ventures" course at Stanford. A year later he left that job and put together a search fund to buy a business. David raised $120,000 from 12 investors. After a year of work, during which he investigated a number of different companies and various industries, David decided to purchase Atlas Security Co. in San Diego, California, from its owner, Dick Allerton. David explained the rationale for his choice of industry and company:

> I was looking for a company in a promising industry that would have sufficient momentum to withstand an inexperienced manager during the initial years. The alarm industry was growing and ripe for consolidation.. This offered a chance to build a large company. But it was also very stable and would allow me to learn the ropes without jeopardizing the enterprise. The primary source of cash flow comes from the monitoring service fees which is "recurring" in nature. Once a customer signs up with an alarm company, they remain a customer for an average of about ten years.
>
> The purchase-and-sale agreement was signed in September 1989, and the deal was consummated in February 1990. Since I had offices at Atlas from September 1989 through February 1990, I had as good a feel for the company as one could hope for.

David purchased the Atlas Security Co. (ASC) from Dick Allerton for $16 million. The purchase required $17 million to fund the acquisition, closing costs, and an injection of working capital. It consisted of $10 million of bank debt and $7 million of subordinated debt and equity raised from private investors. David was able to keep 25% of the equity as his carried interest, to be vested as certain performance targets were reached.

Atlas Security Co. and the Security Industry

Atlas Security Co. (ASC) had been founded in 1910 as the Nightwatch Service. It provided guard/nightwatchman service to local businesses. By the time Dodson purchased the company it was an $11 million business which ranked 16th in the nation out of 14,000 firms in terms of revenues. The company had 138 employees.

The alarm and security monitoring business was a large but extremely fragmented industry in the United States. Such companies performed various services, from burglar and fire alarm service for both residential and commercial accounts to special services. A security firm could monitor the refrigerator temperature at a restaurant or commercial food facility, for instance, and call the manager if the temperature rose above a certain point. David offered his view of the business:

> Essentially, we can monitor any remote kind of activity with a sensor and have that sensing device send us a signal in response to an event. The signal comes in as a series of digits, and our computer system translates it into a message that flashes up on the computer screen in our central station. It will tell us the name of the customer and the kind of signal (e.g., door seal broken, heat or smoke, a particular window sensor, and so on). The screen will also give us any specific instructions for handling the alarm. Our monitoring personnel can then call the customer, the police or fire department, as appropriate.

In 1989, Atlas derived 55% of its $10.7 million in revenues from monitoring service fees; the remainder came from installations and maintenance fees. Virtually all of its profits, however, came from monitoring service fees. Eighty-eight percent of Atlas's monitoring revenue came from commercial accounts; the remainder came from residential customers. Dodson estimated that ASC had approximately 25% of the San Diego area market. David explained the economics of the business:

> Essentially, we are willing to install the equipment at a small or negative profit margin in order to earn the ongoing monthly revenue stream. A typical residential account might cost us $1,000 to install, and we will bill roughly $1,200 for the installation. Then, we will collect $25 a month. For a commercial account, the installation might cost us $4,000 and we will bill $3,000 or $3,500, but we can collect a significantly higher monthly fee, which allows us to pay back our investment in the installation.

The Plan

David's plan for creating value in the acquisition had several elements:

> First, there were a significant number of excessive salaries, payments to Dick Allerton's—the owner's—family members, excessive payments for services to companies owned by friends, and so forth. Based on my analysis, I assumed that we could lower expenses and raise EBIT by $850,000 per year by reducing these items to fair market levels. Second, there were overhead expenditures that were simply too high. The owner/manager—Dick Allerton—was not a real hands-on guy. He was happy to pay a few extra people if it meant that running the business would be easier. Again, based on my analysis, I assumed that we could cut 13 people out of a total of 138 and save another $450,000 per year. Finally, sales and earnings had been flat for three or four years. I assumed that we could grow the business fairly aggressively, and create some value in this way. [See **Exhibits 1, 2, and 3.**]
>
> In my view, the price I paid for the business was a full but fair price; I had to get the cost and overhead savings simply to justify what we paid. These steps alone would not create any value. Growing the business was the only way to actually create value. I thought the sales projections that I had developed were very doable.

Executing the Plan

David described the first few months of his involvement at ASC:

> The biggest issue I faced was how to spend my scarcest resource—my time. One mistake I made was spending time on minor, hard-to-influence opportunities. For instance, I got all excited about people leaving the lights on at their desks when they left for the night. These problems were easy to spot, but it was tough

> to change people's behavior; these cost savings were not easy to achieve and had minimal impact.
>
> One of my board members was after me to raise our prices. This was part of our plan, but I simply kept putting it off. We finally did it six months into the deal. It was very easy, and it brought another $30,000 in cash flow to the bottom line *each month*. I should have been spending my time on things like this instead of the desk lights.
>
> Another one of my board members finally convinced me that I was "majoring in the minors." I was spending my time on the most easily identified, but not necessarily the most serious, problems. There were many other opportunities that were less visible, but of far higher potential value. I finally developed the practice of going through a detailed P&L statement and making a list of all the possible savings, their amount, and the probability of actually being able to achieve them. Then, I simply multiplied the potential savings times the probability of achieving it to get an "expected value" and picked off the biggest projects first.
>
> I thought it would be really hard to fire people, but I got used to the idea. For one thing, we were sufficiently highly leveraged that I had a gun to my head. Coupled with this, one of the board members pulled me aside and reminded me that I was being paid a lot of money to do a job, and that I shouldn't expect to enjoy absolutely every piece of it—some of it was not going to be fun. This had a big impact on me.
>
> Still, I was slower to pull the trigger than I should have been. It was obvious to everyone, for instance, that the controller needed to go. We talked about doing it in week one, but I didn't do it until the fourth month following the acquisition. The person I replaced her with was so good that I started to see the enormous benefit that I could get from good people. It freed up so much of my time to do the things that I should have been doing.

Other employees spoke about David taking over the company:

> He spent the first couple of months asking all sorts of questions and really digging in to the details of the business. We spent a lot of time educating him. One big difference was that David would listen. Mr. Allerton was pretty much a dictator; there was never any debate when he had made up his mind about something.

ASC Operations and Organization

The company was organized along functional lines. [See **Exhibit 4A** for initial February 1990 organization chart.]

When acquired, the following operating functions reported to the vice president of Operations:

- Central Station: This group was responsible for monitoring alarms on a 24-hour, 7-day-a-week basis, and for calling customers police or fire departments if required.
- Operations: This department included approximately 50 people who performed installation and service work on residential and commercial accounts. Each technician drove a truck owned by ASC. The department was organized into three groups, as follows:
  - Commercial Installations.
  - Commercial Service.
  - Residential Service: there was no residential installation function because all residential installations were performed by subcontractors.
- Warehouse: This department ordered the hardware that would be required for installing systems and distributed it to installers each morning for that day's installation. (In addition, servicepersons and installers kept certain widely used parts and supplies on their trucks.)

The sales functions included residential and commercial sales. There were eight residential and eight commercial sales reps, who were paid largely on a commission basis. The sales process involved either a residential or commercial salesperson calling on an account. Leads were obtained through referrals and calls from customers in response to Yellow Page or other advertising. Residential salespeople rotated through leads as they were received; commercial sales people covered specific geographic territories. Salespeople had a fair degree of discretion in negotiating the installation price, and each job was considered "custom" because of the wide variation in the number of door and window contacts, the type of events which customers desired to have monitored (motion, heat, smoke, etc.), the length of wire required to connect the system, and the type of structure in which the control equipment and wire would be installed. The salesperson would evaluate the installation, quote a price and "spec" the job out for the installer. The salesperson then scheduled the installation with the installation department. Based on the customer contract, a work order and parts list was generated and staged [prepared] in the warehouse, to be picked up by the installer the night before or morning of the installation.

Residential installations were performed by subcontractors who were paid on a per-job basis; commercial installations were performed by both subcontractors and company employees. Service personnel were dispatched when a system experienced a problem, such as the generation of false alarms. A 90-day warranty covered commercial installations work; a one year warranty covered residential.

David's Management Style

David commented on his management style and how it had evolved:

During the first few months after the acquisition, I was very hands-off. I had a picture—maybe it was from all my OB courses—that you needed to delegate and empower others. Well, I should have spent much more time testing people up front to see what they were really capable of. The vast majority of our workforce punches in, punches out, and looks for their paycheck on Friday. They care about their work, but they don't think about it 17 hours a day like you and I do. I couldn't believe it when I offered people promotions and they turned them down. I kept thinking, "What about your career path," and they were thinking, "What about my bowling night and a few beers after work with my friends?" I must say, I know plenty of people who think like this, and it is not clear to me that they are any less happy in their lives than some of my business school classmates, so I'm not criticizing their attitude. But it *is* very different from what I expected.

Anyway, I was pretty hands-off at the beginning. But there were a couple of incidents where the board pressed me on the details of certain issues or problems, and I just didn't have the data. At board meetings, they pushed me to get more involved. I remember a phone call with one of the board members where he told me that I couldn't just sit in the corner office and run the company. So, I started to immerse myself in the details of what was going on. It wasn't always easy—each thing you decide to get involved in is adding another big project to your to-do list at a time when you really feel like you don't need any more projects.

As I started digging in to things, it was not immediately clear to me how involved to get. I didn't have a feel for what I needed to do versus what I should let the manager do. For example, should I just give the operations VP a broad outline of what we would need to do to implement a layoff, or should I actually perform the planning and let him look over my shoulder? I gradually learned that all of these people are different; some managers simply need general direction and they will perform fabulously. But with others, if you ask them to look at a situation, diagnose the problem, figure out how to fix it, and then implement it, they will really disappoint you. So one thing I had to do was spend a lot of time trying to figure out how each person liked to work and adjust my style accordingly.

Gradually, I came to see that I could have a real impact by focusing my attention on an issue. By simply going down and talking to whomever was most intimately involved with the situation, I would learn what I needed to know. I was a little uncomfortable at first, not "going through the channels," but I ultimately decided that I should not have to go through every layer of the organization just to get information. If I am going to implement some major change as a result of what I learn, then I feel I need to run that through all of the layers involved, but if it is a simple quick fix, then we should just be able to do it.

Another big misconception on my part was that if you wrote a memo to someone and asked them to do something, it would get done. People misunderstand, or they forget, or they figure that you'll forget, or they are simply too busy. Or, they just don't know how to do what you want them to do. Just writing a memo is one of the least effective ways to get something done. I finally got one of those time management systems, and let me tell you, it works. For example, I decided that I wanted all our central station employees to say "Have a nice weekend" when they concluded calls with our customers on Fridays, Saturdays, and Sundays. But the memo was only the start. I wrote in my time management book to remind myself every Friday for the following six weeks to call the central station and remind them—I knew it would take that kind of follow-through to convince the employees this was not just the "idea of the day."

I also found that the constant interruptions by managers asking me questions left both them and me dissatisfied. They never got my full concentration, and I felt "interrupted" and resented the disruption. Therefore, I set a time every week when I get together with each of my reports. My deal with them is that I won't run into their offices every couple of hours all week long; I simply keep track of questions, projects, etc. And during our weekly meetings, we discuss these issues and agree on a project, an objective, a deliverable, whatever. Then I get them to pick a date when they will have it accomplished. Every week during our discussion we make up a list of each task and the dates, and then we photocopy it at the end of the meeting. They are supposed to alert me in advance when they are not going to meet the date. We start each meeting by reviewing what they were to have accomplished in the past week.

This *does* work. I would say our ability to execute has gone from a D to a B-. What is on the list is only a small portion of the work that constitutes their jobs; they still have their core, day-to-day operating tasks to do. But this is a way to be sure that the other stuff—changes we want to make, special projects—gets done.

When we talk about the projects or tasks, I don't usually dig into the details of their thinking, all the options they considered, what their concerns are, and so on. This is a function of both the degree to which I trust them and my sense of the difficulty and potential impact on the company.

The other tool that I have grown to rely on is the compensation system. When I got here, everyone was overpaid. So I cut everyone's salary, but I put in a bonus system to let them get back up to where they were. This was a possible 10% of salary as a function of how well we hit our companywide earnings (EBIT) target. This plan flopped. First, by August or September, the die was cast. They figured we weren't going to make our target, and that was that. Second, it seemed very uncontrollable to people; their bonus was affected by a lot of factors that were simply outside of their control.

So the next year I put in a quarterly system that was completely tied to each person's departmental budget. This resulted in a night-and-day difference in their behavior. They started to worry about every penny in their budget. And, the quarterly nature of the system meant that they could never rest—the next quarter was always right around the corner. This does have some negative consequences. People become very short-term oriented. But I figure that I can impose a longer-term perspective more easily than I can impose that basic discipline. Second, it does make people a bit uncooperative with each other. A manager may be reluctant to help another department out if it imposes a cost on his budget. And I learned that people oftentimes don't care about an issue unless it affects the

> budget numbers. So I do have some fine-tuning to do. But it is definitely a move in the right direction.
>
> I have also developed what I think is a very direct style. If someone comes into my office and starts talking about the problems that they are having with another manager, I will hear them out. But my response is almost always to suggest that they talk to the manager directly and that they tell that person that they have already spoken with me. This way people don't have to worry that there is a lot of talking going on behind their backs that they do not know about.

David's subordinates spoke about his style:

> We have our weekly meetings, which we all jokingly refer to as our "quality time" with David—when he's not getting interrupted and can focus his attention on you. We can pin him down and get answers to the questions we've been saving up all week. The rest of the week, if you have a question or a problem, he'll usually ask if it can keep until the weekly meeting.
>
> During these meetings David will also ask you to take on certain projects or get back to him with the answers to certain questions. From my point of view, I often think some of my other tasks are higher priority, but if David assigns you "homework," then that becomes number one.

* * *

> He is much more budget-oriented. Mr. Allerton didn't really set goals or let you know how you were doing. Here, the bonus is something we all work toward. We have had some problems in terms of setting goals though. The first year David was real aggressive, and some of the numbers were just impossible to hit. It was discouraging to know that you were knocking them dead but still not hitting the budget.

* * *

> He does still dig pretty deeply into what is going on. He'll ask a lot of questions about everything. He wants a tremendous amount of information that we never kept before—cost per lead generated, number of "go-backs" per installer or service rep. The problem is that much of this data is still manually collected and calculated.
>
> He still signs every check, looks at every invoice, approves every contract. He'll call and ask if one guy is getting $10 too much commission. It is a wonder that he can accomplish as much as he does. He is here before 6:00 every morning and doesn't leave until 6:00 or 7:00 at night.
>
> David did find a lot of ways to cut expenses. Most of them made sense, but some people found stuff like putting the bathroom light switches on a timer a bit agitating.

> All in all, David definitely gets better performance out of me and all of the senior management group than Mr. Allerton did. It is clear what it is expected of you and how well you're achieving those results.

Objectives and Results

David spoke about the results that had been achieved at ASC in the two years he had been managing the company:

> We have basically hit our revenue and EBIT numbers. [See **Exhibit** 5 for financial results.] The bad news is that it has been harder than I thought to implement a number of these changes. The good news is that there is so much more room for improvement than I initially believed. For instance, when I started digging in to our phone costs, I found that we were paying the phone company $680 per month for a direct phone line to one customer. But we were charging the customer just $68 per month. On one hand, you worry about what else may be going on; on the other, this is great—it's easy money.

Going forward, David described his objectives as follows:

> The objectives that we outlined for our investors were to grow via acquisition. More than ever, I believe that this is a viable strategy. However, I have been reluctant to pursue an acquisition strategy too aggressively until we have ASC running like a well-oiled machine. I want to be sure that we have our system down so that we can transfer it to other companies. And I want to feel comfortable spending less time at ASC so I can spend the time it will take integrating an acquisition.
>
> The installation function is one of the most difficult problems to get our hands around, and I have left it for last.

The Installation Function

One area on which David wanted to focus his energies was installations. The installation and service functions were a segment of the operations division. Forty-six employees were responsible for roughly 225 installations and 2,100 service calls per month. The average wage for installers and service technicians was $9.50 per hour, for a 40-hour week. Service technicians ("techs" or "installers") were between 20 to 50 years old; their average tenure was about six years. Supervisors had typically been installers or techs before being promoted. Subcontractors performed residential installations, and were paid on a piece-rate system based on the number and type of devices (panels, heat sensors, window contacts, etc.) installed. Since all residential systems were installed by subcontractors, the margins were very predictable—the only issue with these installations was quality. However, for ASC's own installers, the company had major problems with both labor costs and quality. David described how the department had evolved:

From the time I bought the company, there were rumblings that things were not working properly. People within the company would comment on how "screwed up" the department was. And, the salespeople weren't shy about complaining—they would hear from customers when we made a mistake.

In terms of organization, initially we had three departments: commercial installations, commercial service, and residential service. All three department managers reported to an operations manager.

Within a year, we had changed the structure so that there was one installation department and one service department, and each department handled both commercial and residential accounts [see **Exhibit 4B**]. The rationale for this change was to have a more flexible pool of people. With the old system, if we had a commercial service problem a half-mile away from where a residential service technician was working, we had to get a commercial technician from across town. Under this approach, service technicians could work on both residential and commercial accounts, and people could be utilized more efficiently.

At the same time, we eliminated the operations manager position. I figured if the VP was closer to the action, we might have an easier time getting our hands around the problems there.

The VP of Operations was someone who had been at the company for a while, and whom I thought highly of at first. But, things just weren't getting done. For instance, I figured that if I sent a memo that said dispatch times were too long [the time between when a service call was received and when a person was sent over to fix the problem] and that he should look at how we were scheduling relative to demand, that he would do some analysis and come up with a solution. But this didn't happen.

I now realize that I wasn't being a very good coach. This was during the early part of 1991, and I was spending a lot of time on the sales and marketing side of the business. So it wasn't until the late summer of 1991 that I was really able to dig in to what was going on. I started collecting all the data I could get my hands on regarding dispatch times, scheduling and the like. I was actually making up the schedule for individual service people—the times they should work, etc. I started managing the VP of Operations very closely, giving him very specific tasks with follow-up dates. I finally got frustrated with the situation and he was terminated in September of 1991.

I decided that I really wanted to run the installation and service departments for a while myself to get a feel for what was going on and try to improve things, so I didn't hire anyone right away. I started managing this piece of the organization myself in September 1991. I quickly saw that the new organization structure we had put in place earlier that year wasn't working. When we combined the departments, we had reduced the number of supervisors as part of the efficiency effort. Yet, we didn't have any controls or systems in place to substitute for this supervision. Things were less under control than I'd thought.

As I look back on it, I see that the original plan had flaws, and—on top of that—implementation was disastrous.

The first thing I tried to do was collect as much information as I could about the basic work and organization of the department. We had 46 people in these two departments, including the two department managers:

- The Service Department had 3 supervisors and 24 service people, three of whom worked on residential accounts and 21 of whom worked on commercial accounts; all reported to the service manager.
- The Installation Department had 4 supervisors and 13 commercial installers who reported to the installation manager.

We did about 225 installations per month: 100 commercial and 125 residential. The residential installs are performed by subcontractors, as are about 40% of the commercial installs. So our personnel perform about 60 commercial installs per month, or 15 per week.

An average commercial installation costs about $1,000 when performed by a subcontractor, and costs us about $1,500 if we do it with our own personnel. This includes a fully burdened labor rate, as well as the parts. We pay subcontractors according to a standard parts and labor cost. [See **Exhibit 6** for excerpts from subcontractor installation pricing schedule.]

The subcontractors we use are essentially sole-proprietor electrician types. They don't work for someone else for a reason—they don't like to be told what to do. So, they are tough to manage. Furthermore, the IRS limits the amount of control you can have over a subcontractor in order to prevent people from classifying employees as subcontractors: they can't wear our uniforms, and we can't enforce a dress code. There are other limitations as well.

The installation manager knows who is particularly good—or bad—at different kinds of jobs, and will basically match installers with jobs on that basis. A subcontractor may be particularly good on refrigeration systems, say, or one of our guys may be good at systems for banks.

From a purely financial perspective, it looks attractive to go completely with subcontractors. But, I want to keep our people. I think the ability to control them more tightly, and present a more professional image, is critical. I'm also confident that if we can figure out how to manage this department, we can do the work for less than it costs to pay a subcontractor.

It didn't take me long to see that people had absolutely no incentive to be efficient. If you were working on a job that should take three days, and you came in after three days and said you were done, we'd put you out on another job. So, why not stretch it to four days, or even four and a half? If you came in at 2:00 p.m. on a Friday, we're not going to send you out on another job with only two hours left in the week. People do punch in and out, but this is more for job costing purposes than for determining their pay. We pay them on the basis of a 40-hour week.

I also collected some industry data on other alarm companies. This gave me some valuable benchmarks to refer to. [See **Exhibit 7**.]

As I looked into it, the data showed that certain installers had far more post-installation problems than others. Customers complained about the way the wiring looked, customers weren't properly trained on how to use the system, work just wasn't up to the standards that we expected. I determined that a large percentage—25%—of our installations required a service call within the warranty period. For a good operation, this figure should only be about 5%.

I decided that we needed to have supervisors "start" and "certify" jobs—for both our own employees and subcontractors. They would go to each installation in the morning, consult with the tech on any anticipated difficulties, and then come back at the end of the job and "certify" that the job had been accomplished to standard.

As I thought about it, I realized that this would put a strain on our supervisory personnel. So, it seemed to make sense to organize the department along commercial and residential lines (rather than installations and service). That way, we would have more supervisors who could be available to help start and certify jobs. [See **Exhibit 4C**.]

So, I reorganized the department in order to accomplish this [see Action Plan, **Exhibit 8**, Memo, **Exhibit 9**, and Certification Report, **Exhibit 10**]. Then, a month later, I issued the new policies and procedures that we would be using. [See **Exhibit 11**.] The biggest change was that the installers were watched a lot more closely. It really required a great deal of my hands-on time to demonstrate to people that this could work. Every morning was another fire drill. A supervisor was sick, someone was late getting in to work—it required a lot of last-minute decision making on the part of people down there. They weren't used to this. The old system pretty much ran itself, and it didn't require any tight coordination. This is the system we have been trying to make work for the past month or so. It seemed like things were working pretty well, and then I find out that the policies are not being followed.

I have looked into some new tools to help manage the function. One idea I have seen other alarm companies use is a truck monitor. This is a small computer that you can install in each truck and then download the data each day or week when they come in for the parts they require. The computer will record the exact time the truck was turned on and off each day, the miles driven, as well as any times when the truck exceeds 65 mph. These machines cost roughly $300 per truck.

Another idea that I have seen is a computer location system. You can outfit each truck with a small transmitter/receiver at a cost of about $300 per truck and $15 a month. The system comes with a map of your local area. Then you can

> simply "page" all the trucks according to a preset schedule or according to your needs. The location of each of the trucks will appear graphically on the screen. It will also report where the truck was last located, so you can tell if it has moved or not. And you can input a new location—where we have a new installation or service call—and it will give you the rank order of who is closest to the desired location.

Ed Latham, Commercial Operations manager, offered his view on the situation:

> It is tough getting people to follow the new policies and procedures. There is a certain mentality in place after doing things one way for a long time. For instance, we had a supervisor who thought it was his job to *supervise*. If he was out at a customer and saw an alarm control panel hanging off the wall, he would simply write up a service ticket and send one of the service personnel out to fix it. The guy did not want to pick up a screwdriver. You can't really blame the man. He grew up in an environment where certain things defined his status—the supervisor title, the fact that he didn't have to do any real service work. People basically don't like change. They want to continue doing what they are doing. They are scared by something new.
>
> All of these changes are unsettling to the people in the field. They spend the bulk of their day out of the office, and when they see familiar faces in new jobs—or out of a job—they start to worry that maybe they are next. Their fear takes the form of resisting change. We are a small group, so it does not take too many people to stir up the pot.
>
> There is a lot of data that we don't have now—the number of hours people actually spend on the job, the number of hours they drive, and so forth. We have job tickets, but no one goes back and tabulates the data and computes meaningful statistics. The salesperson estimates the number of hours that the installer should take, and specs out the equipment. The parts list goes to the warehouse, so they can stage the jobs. When the installer gets out to the job, all he has is the parts list. Either he tries to track down someone here, or the customer has to take him through what he wants.
>
> We are supposed to inspect 100% of the installation jobs, but it doesn't work out that way. The idea is that the supervisor inspects the work when the installer is still there. But we have more jobs ready to be inspected than we have supervisors, and the "start" and "certify" process seems to bunch up at the beginning and end of the day, or the installers work later into the night than the supervisors stay on the job. If they are at a customer and have another few hours of work to do, we want them to stay on the job rather than have to come back the following day. On any given installation job, I can't tell you that it should take 40 hours versus 50 hours.
>
> It does add to the challenge of managing people when everyone is paid the same hourly wage and people see that some individuals get by doing a lot less work. They figure, "Why the hell should I break my back when the other guy gets the same money for doing less?"

From the sales side of the organization, there were complaints about the installation function:

> The installation people are not too smooth with the customer. They will get out to the customers' premise and complain about the estimating job we did, track dirt in with their boots, not pay enough attention to how the installation looks. They also don't spend enough time training the customer in how to use the system. It doesn't help our word-of-mouth when customers aren't happy.

From the installation side, there was a complaint that the salespeople did a poor job estimating the length of time and cost of an installation:

> The salespeople are interested in making the sale. There are some things that they should catch, but they don't look too hard because they are afraid that they might lose the sale. For instance, last night I got a call from an installer. He was doing an upgrade at a customer's residence. The salesman quoted a particular price that included new contacts and a new panel. But the installer went out there and realized that the old wiring job is not to code. But once we *touch* the system, we are responsible. We have to rewire *everything*, or else we're liable for any problems going forward. This is the type of thing that the sales guy could have figured out if he had looked a little harder.

A supervisor in the department offered his perspective:

> I would say that we inspect about 40% of the jobs. We have more problems with subcontractors, so we inspect a higher percentage of their jobs, and a lower percentage of our own work. On the one hand, they have a system where we are supposed to do this "start" and "certify" process, but you are constantly getting paged and told to go here or there to fight some fire.
>
> When you inspect a job, you can get a feel for how well the work was done, but not how efficiently. There is no target number of labor hours with which to compare the actual time.

David summed up his views:

> I have concluded that managing this function is taking way too much of my time. The way I see the issue is as follows: I can hire someone to fill the slot, as I'd always intended. I feel that I know enough to point the person in the right direction. I know that there is a pretty good chance that I can find someone out there with a lot of experience who will be better at this job than I am. I am really anxious to get back to the task of trying to grow the business via some acquisitions. I know that getting the installation process right is a key step, but I also know that I need to pay attention to some other things.
>
> I have taken a few steps toward looking for a vice president of Operations, but I am not sure what kind of person to hire. The candidates range from individuals in their early 40s with lots of industry experience to a Stanford MBA in his late 30s who has run larger operations in other industries, to young college

graduates looking for an opportunity to make a name for themselves—and they ranged in salary from $35,000 to $115,000 per year.

My board has encouraged me to hire "ahead of the curve" and build management talent to grow the company. But a $50,000 salary differential is a lot for a company our size. And how many hotshot MBAs does a $10 million to $15 million company need?

Anyway, just when I think that we're making some progress, I learn that they are not even keeping to the policy that has been put in place. I'm getting more frustrated, and our performance is deteriorating.

Exhibit 1 ASC Historical Financials, Year-end July 31,

	1986	1987	1988	1989
Revenue:				
Monitoring revenue	5,908	5,972	5,761	5,843
Operating revenue[a]	3,796	4,341	3,894	4,899
Total revenue	9,704	10,313	9,655	10,742
Expenses:				
Operations	7,410	7,431	7,261	8,091
Selling	994	1,111	980	1,090
Executive	307	420	283	253
General and administrative	1,116	1,302	1,160	1,309
Total operating expense	9,827	10,264	9,684	10,743
Income from operations	(123)	49	(29)	(1)
Other income	245	258	276	331
Owner's compensation[a]	636	674	716	758
EBIT:	758	981	963	1,088
Depreciation	532	500	402	388
EBITD	1,290	1,481	1,365	1,476

[a] Includes installation and maintenance fees.

Exhibit 2 ASC Pro Forma Projections, Year-end July 31

	1990	1991	1992	1993	1994
Revenue:					
Monitoring revenue	6,466	6,917	7,401	7,918	8,471
Operating revenue[a]	5,426	5,880	6,193	6,543	6,953
Total revenue	11,892	12,797	13,594	14,461	15,424
Expenses:					
Operations	7,671	7,962	8,297	8,671	8,875
Selling	852	880	931	962	989
Executive	189	197	202	213	220
General and administrative	758	780	823	859	879
Total Operating Expense	9,470	9,819	10,253	10,705	10,963
Income from operations	2,422	2,978	3,341	3,756	4,461
Other income	228	434	87	92	98
Owner's compensation	0	0	0	0	0
EBIT:	2,650	3,412	3,428	3,848	4,559
Depreciation	259	321	385	451	519
EBITD	2,909	3,733	3,813	4,299	5,078

[a] Includes installation and maintenance fees.

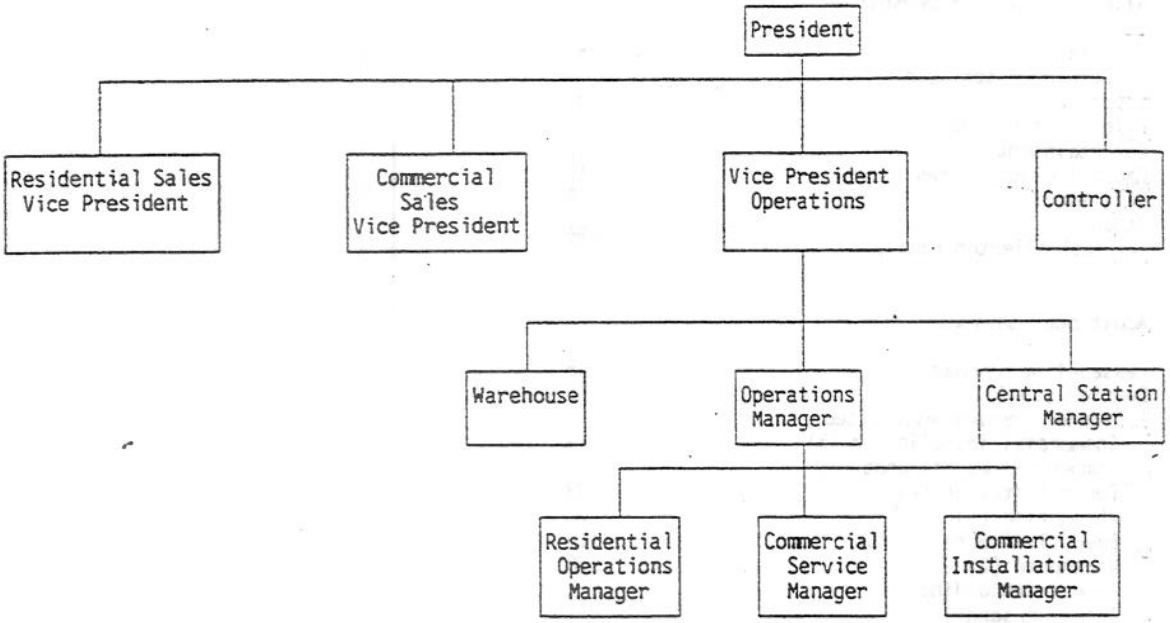
Exhibit 3 Projected Expense Reductions ($000)

1990 Savings	
Allerton Family Expenses:	
Salaries	$ 592
Professional services	50
Insurance	50
Allerton financial	35
Entertainment	51
Capital expenditures	16
CCTV source	10
Other	30
Total Allerton Family	$ 834
Additional Savings:	
Leased-line savings	$ 106
Quarterly billing	46
Personnel (number eliminated)	
Commercial installation (3)	114
Commercial maintenance (2)	86
Central station (4)	109
Accounting (1)	20
Executive secretary (1)	26
Warehouse (2)	30
Taxes/withholding	52
Total personnel	$ 437
Total additional savings	$ 589
Total cost savings	$1,423

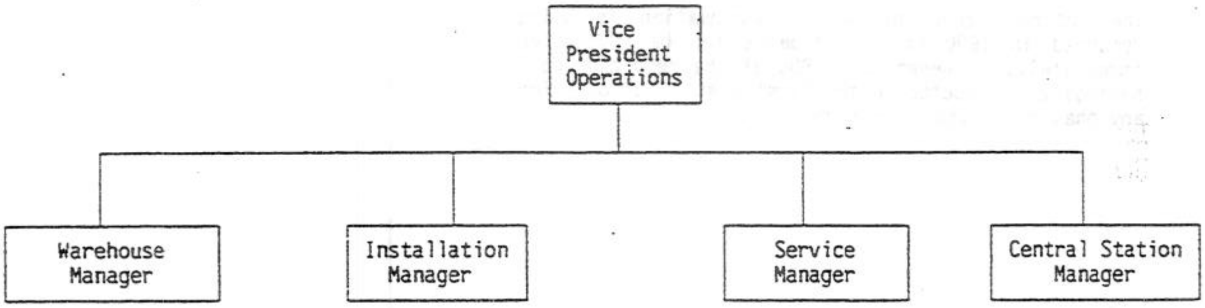
The entire amount of owner compensation is being deducted in 1990 as that expense can be eliminated immediately. However, only 80% of the remaining cost savings are deducted in the first year to account for any phasing in that may be required.

Exhibit 4 Organization Chart

4A Upon Acquisition (February 1990)


President
Residential Sales Vice President
Commercial Sales Vice President
Vice President Operations
Controller
Warehouse
Operations Manager
Central Station Manager
Residential Operations Manager
Commercial Service Manager
Commercial Installations Manager

4B February 1991: Operations Division


Vice President Operations
Warehouse Manager
Installation Manager
Service Manager
Central Station Manager

4C November 1991: Operations Division

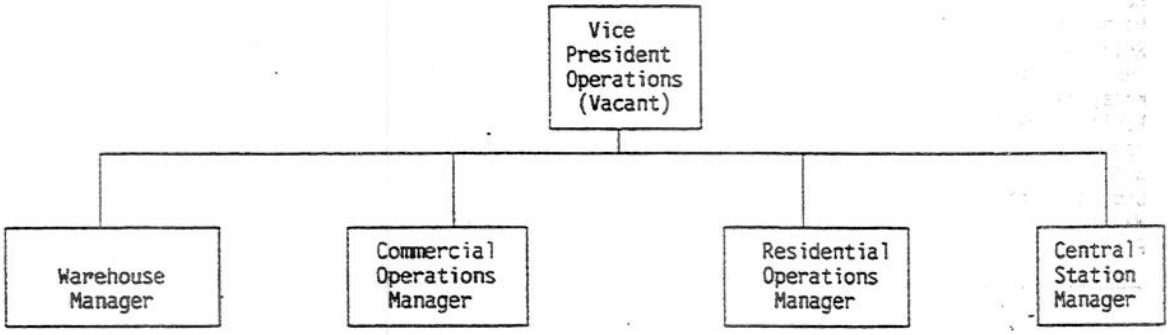

Vice President Operations (Vacant)
Warehouse Manager
Commercial Operations Manager
Residential Operations Manager
Central Station Manager

Exhibit 5 ASC Financial Results

Profit and Loss ($000)

	1990	1991
Revenue:		
Recurring (monitoring)	6,250	6,686
Installation	5,838	5,774
Maintenance	444	500
Other (proprietary)[a]	523	646
Total Revenue	13,055	13,606
Operating expenses:		
Installation	3,343	1,894
Maintenance	2,334	1,480
Selling	763	947
Central office	1,576	1,460
Other (proprietary)	329	2,354
Total operating expenses	8,347	8,135
General administrative expense	2,627	2,163
Operating profit	2,081	3,308

[a] Proprietary revenues and expenses related to large, highly specialized security consulting and design projects

Exhibit 6 - Excerpts from Subcontractor Installation Pricing Schedule

Item	Hardware Price ($)	Installation Labor Hours
Intercom	34	2
Remote	17	1
Water flow switch	26	1.5
Smoke detector	17	1
Heat detector	13	0.75
Horn/strobe	17	1
Relay	5	.25
Temperature alert	17	1
Money clip	17	1
Vault vibration	19	1
Motion detector	26	1.5
Beam	34	2
Door contact	17	1
Window cup	17	1
Panel	51	2

Exhibit 7 ASC Comparison with Industry Averages (for 1990)

	Six-firm Average	Atlas Security	Gotham Detection	Metropolitan Security	Wilson Alarm	Vigilant Security	Safe & Sound
Annual Revenue ($000)	10,833	12,000	20,000	4,000	5,000	8,000	8,000
Operating margin	17.4%	24.5%	15.7%	9.6%	21.8%	20.6%	12.2%
Number of employees	143	123	253	61	78	96	140
Revenue per employee	75,683	97,560	79,000	65,000	64,000	83,000	57,000
Customer disconnect rate	10.0%	11.5%	10.9%	10.0%	11.0%	9.8%	6.8%
Fixed costs/sales	37.4%	38.2%	19.9%	32.0%	49.6%	31.2%	53.5%
Accounts receivable/sales	9.6%	8.5%	10.3%	6.8%	11.5%	8.3%	12.5%
Inventory turn	7.0	21.5	4.84	3.4	3	5.6	3.8
Residential sales/salesperson	126,383	201,585	47,000	152,710	63,000	185,000	109,000
Commercial sales/salesperson	168,290	249,742	63,000	297,000	74,000	292,000	34,000
Residential labor/residential sales	23.3%	26.1%	--	22.3%	24.7%	23.2%	20.4%
Commercial labor/commercial sales	24.0%	30.8%	--	20.9%	24.7%	23.2%	20.4%
Residential material/residential sales	31.7%	36.0%	--	21.2%	37.4%	35.2%	28.7%
Commercial material/commercial sales	35.7%	40.7%	--	36.7%	37.4%	35.3%	28.7%
Residential sales cost/residential sales	30.5%	33.3%	--	32.9%	39.4%	21.0%	26.1%
Commercial sales cost/commercial sales	28.9%	25.3%	--	32.9%	39.4%	21.0%	26.1%
Accounts/serviceperson	487	355	482	289	833	400	563
Service calls/serviceperson	4	3.1	4.2	2.2	3.0	4.0	4.5
Accounts/operator	689	573	712	571	865	770	645
Daily signals/operator	411	950	1,012	44	37	33	390
Telephone calls/operator	59	55	57	--	55	90	38
Average response time (seconds)	43	99	35	--	42	7	30

Exhibit 8 November 1991 Action Plan for Implementing Organization Change

The following tasks need to be completed:

Task	Individual	Date
Establish commercial zones	E. Latham	11/5
Establish residential zones	G. Brown	11/5
Approve memo to employees	E. Latham	11/5
	G. Brown	11/5
	C. Crane	11/5
	A. Arbor	11/5
Write field supervisor job description	E. Latham	11/7
	G. Brown	11/7
Order uniforms for field supervisors (FS)	E. Latham	11/7
Order pants for installers/servicepersons	E. Latham	11/7
Order briefcases for supervisor's tools	G. Brown	11/7
Establish residential certification checklist	G. Brown	11/8
Establish commercial certification checklist	E. Latham	11/8
Typeset certification checklists	D. Dodson	11/9
Order calling cards for supervisors	A. Arbor	11/5
Order calling cards for comm'l and resid'l mgrs.	A. Arbor	11/5
Write FS job description	Latham/Brown	11/8
Meet with employees adversely affected	Dodson/Latham	11/5-6
Memo to company re: Changes[a]	D. Dodson	11/6-7
Begin Program[b]		11/6-7
Order pagers for supervisors	G. Brown	11/6
Change phone number for Field Support	F. Peters	11/6
Establish pay scales for supervisors	D. Dodson	11/6
Design "call back" report	T. Happ	11/11

[a] Depends on how soon meetings with adversely affected employees can take place.
[b] Implementation begins day memo goes out to employees.

Exhibit 9 Memo on New Organization Structure for Installation and Service Department

MEMORANDUM

To: All Atlas Employees

From: David Dodson

Date: 11/6/91

Subject: Installation and Service Department

As the company has grown in volume (we are now installing three times as many systems as we used to) the Installation and Service Departments have been under tremendous stress to keep up with the volume. Quality has suffered, we are less responsive to our customers—and of course all of us get frustrated with this. While "growing pains" like this are to be expected when we are expanding as fast as we are, these problems nonetheless must be corrected.

I asked Ed and Gill to propose a program to reorganize the department in order to improve quality and customer satisfaction. Our number one goal was "Zero Defects" in installations and service calls. In order to do this they not only drew on their own experience but also that of many other alarm companies throughout the nation. Allen Arbor—and Steve Crane—also reviewed the plan and offered suggestions and feedback that has been incorporated. I applaud all of them for their program and ask each of you to assist them in its implementation.

Overall Organization

The department will be managed by a *Commercial Operations Manager* (Ed Latham) and a *Residential Operations Manager* (Gill Brown). For now, both of these two positions will report to me.

The Commercial Operations Manager (COM) will have five field supervisors reporting to him, 13 installers, and 21 commercial servicemen. The COM is responsible for all field aspects of the commercial department.

The Residential Operations Manager (ROM) will have two field supervisors, three servicemen, and all residential subcontractor installers reporting to him. In addition, the ROM is responsible for organizing training programs for both commercial and residential operations.

Field Supervisors

Field Supervisors are responsible for the quality of installations and service in their respective areas. Commercial Field Supervisors will be organized by geographic zone while residential Field Supervisors may be organized either by zone or otherwise.

The supervisor is required to visit *every* job start to make sure that the installer has arrived and is ready for work. He will inspect the installer's appearance and make sure that he is in uniform, clean and professional in appearance, etc. Together, the supervisor and installer will scope out the job, making sure that there are no unusual aspects to the work and together will make any decisions that are required (e.g., placement of a control panel, how to fish a wire through difficult walls, etc.)

During the day, the supervisor will be on call to assist with installations, but will spend most of the middle part of the day visiting service calls to inspect for quality, assist in problems, or meet with customers.

In the afternoon and throughout the day, the supervisor will return to jobs that are ready for completion to "Certify" the job completion. The certification involves inspection of the system and signing off that the installer has completed the work to their satisfaction. Once certified, the installer is "off the hook" and the supervisor takes responsibility for any deficiencies in the workmanship.

In addition, the supervisor collects any money owed, gets the call list from the customer, and together with the installer instructs the customer on the use of the system and makes sure that we have met all our requirements for the job.

Some jobs will not be completed until after 5 p.m. or will be finished on a Saturday. For this reason, and to handle evening service problems, one supervisor will be on duty until 8 p.m. Monday-Friday and another will be on duty Saturdays. Due to the timing of initiations and completions of jobs, some jobs may not be certified by the same supervisor that was part of the initial "start" or run through. We have developed well-documented job specifications so this should not cause any major problems, and this will serve as a convenient "check and balance." It is the "Certifying Supervisor" (the one that certified the job at the completion) that takes "ownership" of the system. If he takes issue with, for example, the placement of a control panel that was approved by the previous supervisor, the Certifying Supervisor can write an exception to that on the certification report.

The supervisor will be in uniform at all times. The uniform will consist of khaki pants, a light blue shirt and matching clip-on tie. The supervisor will carry coveralls for any work that might require him to get the uniform dirty, and the tie should come off if he needs to work on the system or is around power tools. Tools will be kept in a briefcase (like you might see with a Xerox repairman). Supervisors will carry calling cards and leave them with all customers. Field supervisors will carry alpha-numeric pagers and the Customer Support Center (CSC) will have an alpha keyboard to send messages.

The schedule will change in the following manner:

	Sun	Mon	Tues	Wed	Thu	Fri	Sat
T. Gates (C)[a]		8:00-17:00	8:00-17:00	8:00-17:00	8:00-17:00	8:00-17:00	
R. Cline (C)		8:00-17:00	8:00-17:00	8:00-17:00	8:00-17:00	8:00-17:00	
L. Ryan (C)		8:00-17:00	8:00-17:00	8:00-17:00	8:00-17:00	8:00-17:00	
K. Lancey (C)		11:00-20:00	11:00-20:00	11:00-20:00	11:00-20:00	11:00-20:00	
P. Kraft (C)		8:00-17:00	8:00-17:00	8:00-17:00	8:00-17:00	8:00-17:00	
J. Harvey (R)[b]		9:00-18:00	9:00-18:00	9:00-18:00	9:00-18:00	9:00-18:00	
D. Gilmore (R)		9:00-18:00	9:00-18:00	9:00-18:00	9:00-18:00	9:00-18:00	

C = Commercial; R = Residential

[a] Will assist residential service and installations on Mondays.
[b] Will assist commercial service if necessary on Saturdays.

Installation

As they [installers] are in front of the customer, they must be professional in appearance. Installers will all be required to wear blue ("khaki like") pants with their Atlas shirt. On their Atlas shirt they should have the NBFAA Technician patch on the left sleeve and the American flag on the other sleeve. As we run out of the existing Atlas shirts, they will be replaced by a similar shirt of a different color and a large Atlas logo either on the front or back of the shirt. All clothing will be kept neat and clean.

Servicemen will be required to wear their hair no more than collar length and halfway down the ear. They must be clean shaven and have their hair neat and clean.

Each week, a report will be issued that will state, by installer, the number of "call backs" as defined as a second trip to a customer for any reason within a 120-day period. This report is the responsibility of the Customer Support Center manager and is distributed to the president, COM, and ROM.

Exhibit 10 ASC Installation Certification Report

CUSTOMER NAME: ____ ACCOUNT #: ____
ADDRESS: ____
PHONE #: ____ SALES PERSON: ____
INSTALLER: ____ STARTING SUPERVISOR: ____

CONTROL PANEL
CONNECTIONS ____
CABLING NEATNESS ____
WIRE TAGS ____
ZONE LIST ____
GROUNDING ____
DRAWINGS ____
INSTALLATION RECORD ____
INTERFACE ____
MANUALS/KEYS ____

PERIMETER
SPLICE CONNECTIONS ____
WIRE RUNS ____
CONTACT MOUNT/SEAL ____
MAGNET ALIGNMENT/SEAL ____
PROPER GAPS ____
TEST ALL DEVICES ____

INTERIOR
CORRECT APPLICATION ____
AREA COVERAGE ____
MOUNTING/PLACEMENT ____
ENVIRONMENT INTERFER ____
DEVICE ADJUSTMENT ____
FIRE INITIATING ____
WALK TEST DEVICES ____

KEYPAD
MOUNTING/LEVELING ____
CONNECTIONS ____
CORRECT LOCATIONS ____
TEST ALL FUNCTIONS ____

MISCELLANEOUS
STICKERS INSTALLED ____
ALL WORK AREAS CLEAN ____
FURNISHINGS LOCATE ____
ATTIC WIRING ____

FINAL EQUIPMENT CHECK
PROGRAMMING ____
EXIT/ENTRY DELAY ____
ARMED & SIGNALS SEND ____
CHECK LINE SEIZURE ____
VERIFY SIGNALS & C/S ____

CUSTOMER FAMILIARIZATION
TRAINING ____
USER PERMITS ____
CALL LIST ____
QUESTION SUB ON OVERALL SATISFACTION ____
PAYMENT BALANCE ____

FOLLOW-UP CALL, 1 WEEK POST INSTALL ____

CUSTOMER COMMENTS: CORRECTED
1. ____ Y N
2. ____ Y N
3. ____ Y N
4. ____ Y N
5. ____ Y N
6. ____ Y N
7. ____ Y N
8. ____ Y N
9. ____ Y N
10. ____ Y N

SUPERVISOR COMMENTS/EXCEPTIONS:
1. ____ Y N
2. ____ Y N
3. ____ Y N
4. ____ Y N
5. ____ Y N
6. ____ Y N
7. ____ Y N
8. ____ Y N
9. ____ Y N
10. ____ Y N

CUSTOMER SIGNATURE: ____ DATE: ____
CERTIFYING SUPERVISOR: ____ DATE: ____

Exhibit 11 Memo on New Procedures

MEMORANDUM

To: All Field Supervisors

From: David Dodson
Ed Latham
Gill Brown

Date: 12/6/91

Subject: Operating Procedures

The purpose of this memo is to give you additional guidelines as to what is expected of you in your position as field supervisor. As you know, under the new program the Field Supervisor (FS) is the linchpin upon which all field operations depend.

Starting Jobs

The purpose of the "job start" is twofold:

- Make sure that the job is started as planned and on schedule; and
- Make any decisions necessary to insure proper installation.

Your job is to enforce the standards of the company. When you arrive on the job site, the first thing you should do is introduce yourself to the customer and give them your business card. We suggest the following script:

> *Hello, my name is __________ and I have been assigned responsibility for your installation. I want you to have my business card, and you should feel free to call me any time. In addition, here is Gill Brown/Ed Latham's card; he is our Operations Manager and he asked that I give you his card in case he can assist you in any way. My job is to make sure that when we leave here, you are fully satisfied with Atlas Security Co.*
>
> *What I would like to do is spend some time with the installer reviewing your (home/facility) and I may be back with you to discuss any issues that I might foresee. By the way, have you received a call list from your sales representative? You need to know that we cannot turn your system on until we have that call list filled out, so if you haven't done so please make sure it is filled out by ______ when we believe your system will be complete.*
>
> *I also have noted here that the balance on the installation is $______ and I will need to pick that up once you are satisfied with our work.*

I will be back after the installation is complete to inspect the system and train you on its operation. However, I am going to leave you with this operation guide now, and you might take a few moments between now and when I come back to familiarize yourself with the operation.

Before I meet with the installer, do you have any questions?

The installer should be in proper attire, dressed neatly, be polite and ready for business. Make sure that he has properly introduced himself to the customer as well.

With the installer, use your expertise to make decisions that will affect proper installation. Common problems that come up after the installation include:

- Misplaced control panel that leads to false alarms.
- Siren in a location that limits the volume.
- Wires exposed in a way that is unacceptable to the customer.
- Miscommunication between the customer and the salesperson about what is going where.

Make sure that when you leave, you say goodbye to the customer, and let them know that you will be back later to inspect the system and train them. If you know you won't be certifying the job, tell them that __________, an associate of yours will be inspecting your system because ___________. If in the course of the day you find that you will not be certifying the job, call them as a courtesy to let them know.

This is not a time to BS with the installer or the customer as you are either needed on the next job start or to help with service problems. You must get in and out in a limited amount of time, yet you do not want to be abrupt with the customer—that's where the skill comes in.

Certifying Jobs

This is where rubber meets the road. If this step is done correctly, it will have enormous impact on the company in the following way:

- Eliminate warranty call-backs.
- Decrease "fire-fighting."
- Increase referrals.

Upon certifying the job, you should come into the home/facility "ready for action." Have your certification form on a clipboard and your game plan in place. When you arrive, be sure to acknowledge the customer and let them know you are there:

Hello again. I hope that the installation has gone well so far. What I would like to do is spend a few moments with the installer and perform some technical tests of your system. Then I would like for the two of us to walk the premises and inspect the system together. Did you have an opportunity to fill out your call list?

(If not, tell them they must get that done before you leave. Also remind them that you will be picking up the check upon their satisfaction of the installation.)

Before I meet with the installer, do you have any questions?

You should then touch base with the installer and address any issues that came up. Also during this time, inspect the control box, check signals, etc. After you have completed all of the technical inspection, excuse yourself from the installer and (without the installer) walk the premises with the customer. This is not to be rude to the installer, but to give the customer an opportunity to tell you about problems that might have occurred.

When you walk the premises, make sure that the customer looks at every device so that there are no "discoveries" later that might lead to a call-back.

After the walk through, train them on the system. When training them, make sure that you let them "make their own mistakes" by letting them do most of the button pushing.

After the training, ask them if they are happy with the system. If not, be sure to document *all* of their concerns. If they say they were satisfied ask them:

> *We are always trying to be better. You could help us out by telling me one thing that we could have done that could have improved our service today, would you do that for me?*

Be sure and ask them for a referral. Any referral that you bring in leads to $$$! Fill out the *entire* certification form (every blank is there for a reason) and ask the customer to sign it.

Then leave them with an ID card, an instruction manual, and a customer evaluation form. Be sure to tell them about the CSC and write the CSC number on the phone sticker and instruction manual. Explain to them how the auto-attendant feature at the CSC operates.

Again, walk in ready to do business. You need to be efficient and get in and out fast so that you can get to the next job. The customer will appreciate your need to be efficient, and will, in most cases, prefer it.

Remember: You "own" the installation. It is your responsibility to insure that there are no problems after the Certification.